Car CD changer 22RC033/00

Service
Service
Service

Service Manual

12 V ⊖

GENERAL

This supplement should be used together with the 22RC032 service (supplement) manual 4822 725 25473.

The 22RC033 is the silver-coloured version of the 22RC032. The CD changer mechanism and electrical parts are the same as for the 22RC032.
There have been added some parts to the mechanical partslist; for this reason and for completeness this supplement contains the complete mechanical partslist, besides the partslist of the cabinet.
For the exploded views and electrical partslist, refer to the 22RC032 manual.

CABINET PARTS AND ACCESSORIES

	4822 443 10984	Door assy silver
1	4822 466 11976	Door lid silver
1	4822 459 05005	Front panel silver
2	4822 442 01406	Cabinet assy silver
3	4822 442 01407	Bottom assy silver
7	4822 529 10308	Damper
10	4822 462 10841	Cap DIN conn.
	4822 736 15096	Instructions for use
	4822 310 11148	Acc. parts - l/r mounting brackets silver
	4822 310 11149	Acc. parts - car fixation brackets silver
	4822 310 10778	Acc. parts brackets and bolts
	4822 321 62671	DIN extension cable
	4822 320 11871	Cable adaptor C_3 (8p) - HosiDIN
	4822 691 10578	CD magazine RC033
	4822 502 21556	Special fix transport screw

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MECHANICAL PARTS RC033

C2	4822 522 33508	Gear, A
C3	4822 522 33509	Gear, B
C4	4822 522 33511	Gear, C
C5	4822 532 12294	Mount-M special washer
C6	4822 532 12295	Mount-M special washer
C7	4822 361 30441	Assy DC elevator motor
C17	4822 532 12293	Special washer
C28	4822 466 11476	Gear plate
C29	4822 532 12295	Mount-M special washer
C39	4822 276 13547	Switch, push
C44	4822 532 12293	Special washer
C48	4822 361 30441	Assy DC loading motor
C50	4822 522 10595	Gear, LA
C51	4822 522 10596	Gear, LB
C52	4822 522 33514	Gear, G
C53	4822 532 12294	Mount-M special washer
C54	4822 361 10935	Assy CD feed motor
C56	4822 522 10597	Gear, FB
C57	4822 532 12735	Special washer
C67	4822 276 13547	Switch, push
C76	4822 361 10936	Assy DC spindle motor
C78	4822 276 13547	Switch, push
C82	4822 532 12294	Mount-M special washer
C86	4822 532 12295	Mount-M special washer
C87	4822 691 10567	Pickup unit
C91	4822 535 10449	Shaft
C92	4822 502 14399	Screw
C96	4822 463 11123	Thrust, screw
C99	4822 320 12224	Flex foil pick-up / CD pcb
C102	4822 402 61548	Lever switch
C104	4822 402 10693	Assy lever / slide (load)
C106	4822 532 12293	Special washer
C110	4822 522 33515	Gear, H
C111	4822 532 12294	Mount-M special washer
C129	4822 528 11071	Flange
C130	4822 276 13547	Switch, push
C134	4822 464 10274	Panel assy
	4822 321 62668	Cable assy 2p
	4822 320 11737	Cable, 4p - 40mm
	4822 320 11738	Cable, 5p - 90mm
FPC602	4822 320 12201	Flat cable wire 30p

Note: *All parts not mentioned here are NO service parts!*

Car CD changer 22RC032/00

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COMPACT
DIGITAL AUDIO

CLASS 1
LASER PRODUCT

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GB 4822 725 25473

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PHILIPS

GENERAL

This supplement manual should be used together with the 22RC026/00 Service Manual, service 12nc: 4822 725 25470.
Only those parts which differ from those of the 22RC026 are described in this manual.
For the following parts: Technical specifications, Service, Functional explanation, Notes regarding repairs, (Detailed) disassembly procedure, IC circuit descriptions/block diagrams, Circuit diagrams and Trouble shooting refer to the 22RC026 manual.

OVERVIEW OF DIFFERENCES

The differences of the 22RC032/00 with respect to the 22RC026/00 are:

- The 22RC032 is suitable for magazines for *10* discs.
  Note: the radio set which is connected to the 22RC032 should have the feature to select 10 CD's.
  Other sets with CD changer interface can control discs 1 - 6 only!

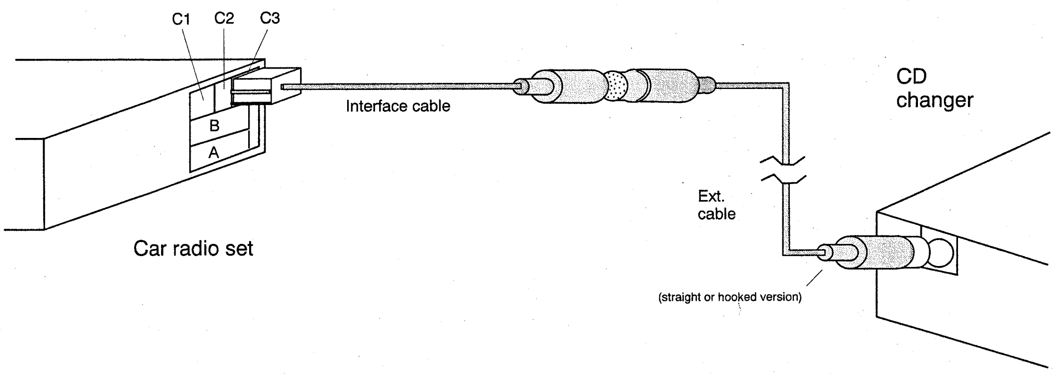
- For the 22RC032 a new interface cable is provided for connecting between connector C3 (8 pin - C3 part of the new 20-pole C connector) and a 13-pole Hosidin connector. For the extension cable the same cable type as for the 22RC026 is used.
  See figure below and the next page.
  Note: the other interface cable (C10 - 13p. Hosidin) can also be used (when a radio set with a 10-pole C connector is used).

- (See also page 22 of 22RC026 manual) IC801-p.50 is connected to +5V via R835 (47k) i.s.o. GND.
  ('10CD select' enabled when this pin is high).

- A different connector pcb for the DIN connector (CS505).
  For completeness *all* pcb lay-outs are inserted in this supplement.

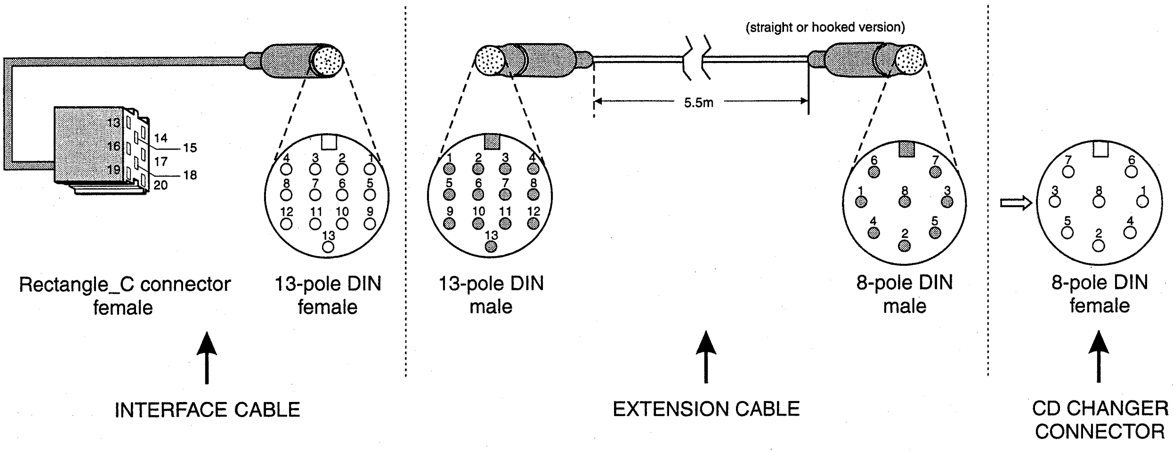
- Difference between some cabinet - and mechanism parts. That implies this supplement contains an adapted drawing for the cabinet disassembly procedure, besides complete mechanism and cabinet exploded views.

INTERFACE CABLE CONNECTIONS



INTERFACE CABLE CONNECTIONS (continued)

The figure below shows the pin lay-out of the connections of the new Rect_C3 (8p.) interface cable (type **EA6260** - service 12nc **4822 320 11871**) and the extension cable (service 12nc: **4822 321 62671**). All connections here are seen from the *front* side of the connectors.


(straight or hooked version)
5.5m
13 14 15 16 17 18 19 20
Rectangle_C connector female
13-pole DIN female
13-pole DIN male
8-pole DIN male
8-pole DIN female
INTERFACE CABLE
EXTENSION CABLE
CD CHANGER CONNECTOR

RECTANGLE_C3 CONNECTOR

Pin	Signal
13	D^2B +
14	D^2B -
15	BUS_GND
16	+ 12V PERM.
17	+ 12V SW.
18	SIGN_GND
19	L_CH
20	R_CH
(SHIELD)	(GND)

13-POLE DIN CONNECTOR

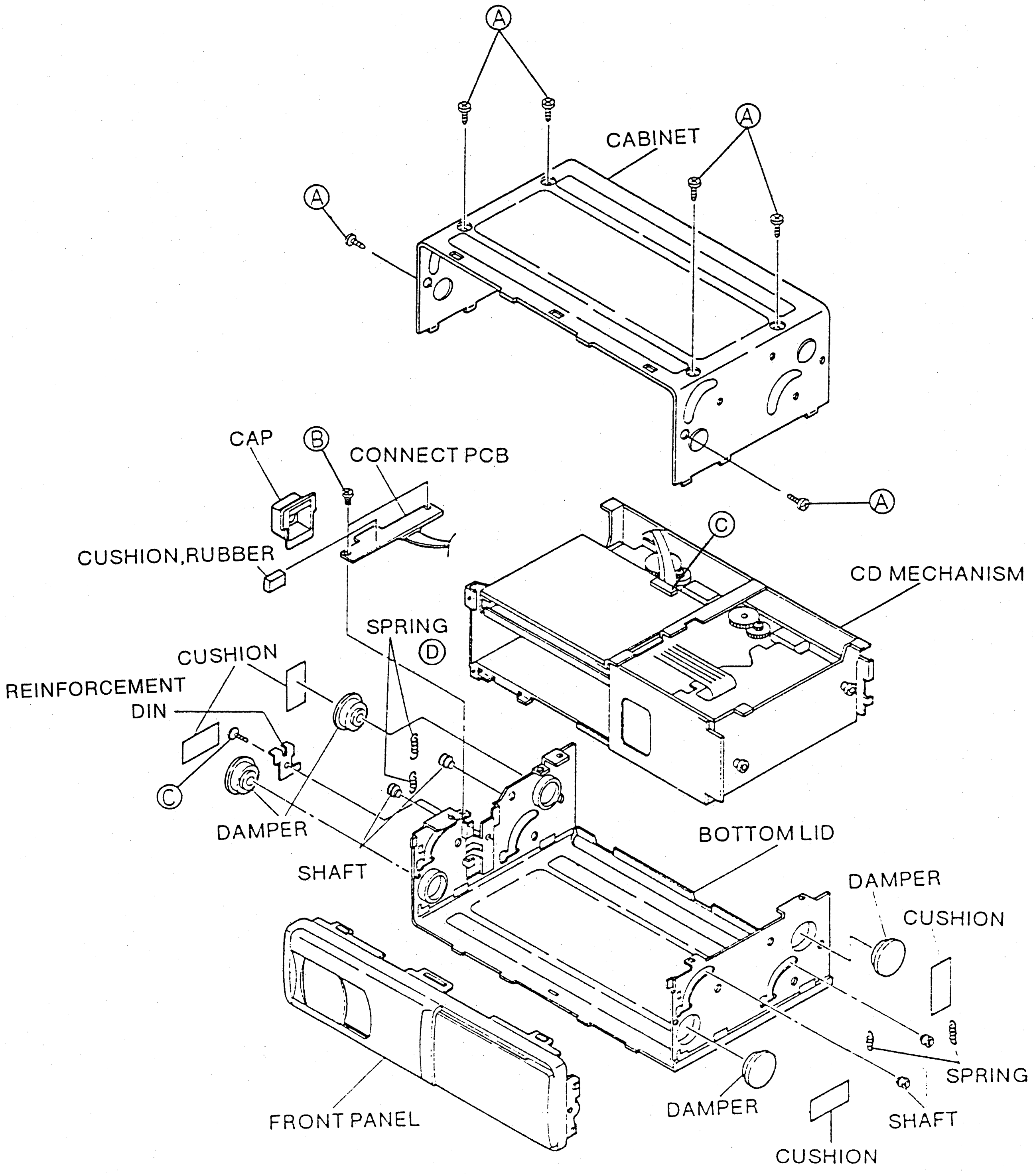
Pin	Signal
1	SIGN_GND
2	L_CH
3	SIGN_GND
4	R_CH
5	GND
6	N.C.
7	+ 12V SW.
8	+ 12V PERM.
9	BUS_GND
10	N.C.
11	D^2B +
12	D^2B -
13	N.C.
SHIELD	GND

8-POLE DIN CONNECTOR

Pin	Signal
1	+ 12V SW.
2	+ 12V PERM.
3	GND
4	D^2B -
5	D^2B +
6	R_CH
7	L_CH
8	SIGN_GND
SHIELD	GND

DISASSEMBLY

1. Remove 6 screws Ⓐ which secure the cabinet.
2. Remove the cabinet with pushing the front panel stopper.
3. Remove the front panel with pushing the both bottom lid stoppers.
4. Remove two screws Ⓑ, the re-inforcement and the connector Ⓒ. The connector pcb can be removed then.
5. Remove the cushion.
6. Remove the damper.
7. If the two springs Ⓓ installed between the mechanism and the chassis are removed, the complete mechanism can be removed then.


Ⓐ
CABINET
Ⓐ
Ⓐ
Ⓐ
CAP
Ⓑ
CONNECT PCB
CUSHION,RUBBER
Ⓒ
CD MECHANISM
SPRING
Ⓓ
CUSHION
REINFORCEMENT
DIN
Ⓒ
DAMPER
SHAFT
BOTTOM LID
DAMPER
CUSHION
SPRING
SHAFT
DAMPER
CUSHION
FRONT PANEL

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RC032

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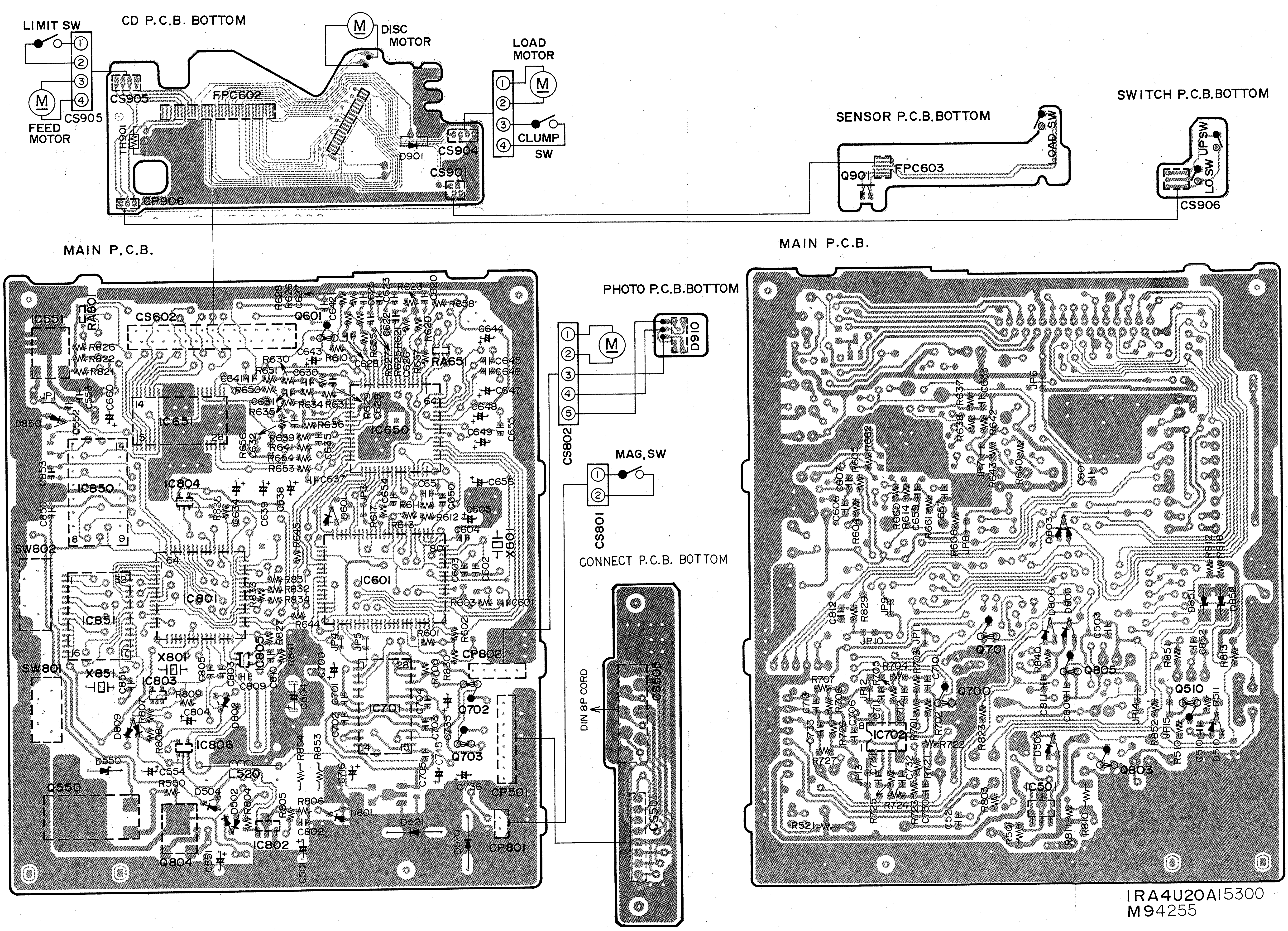
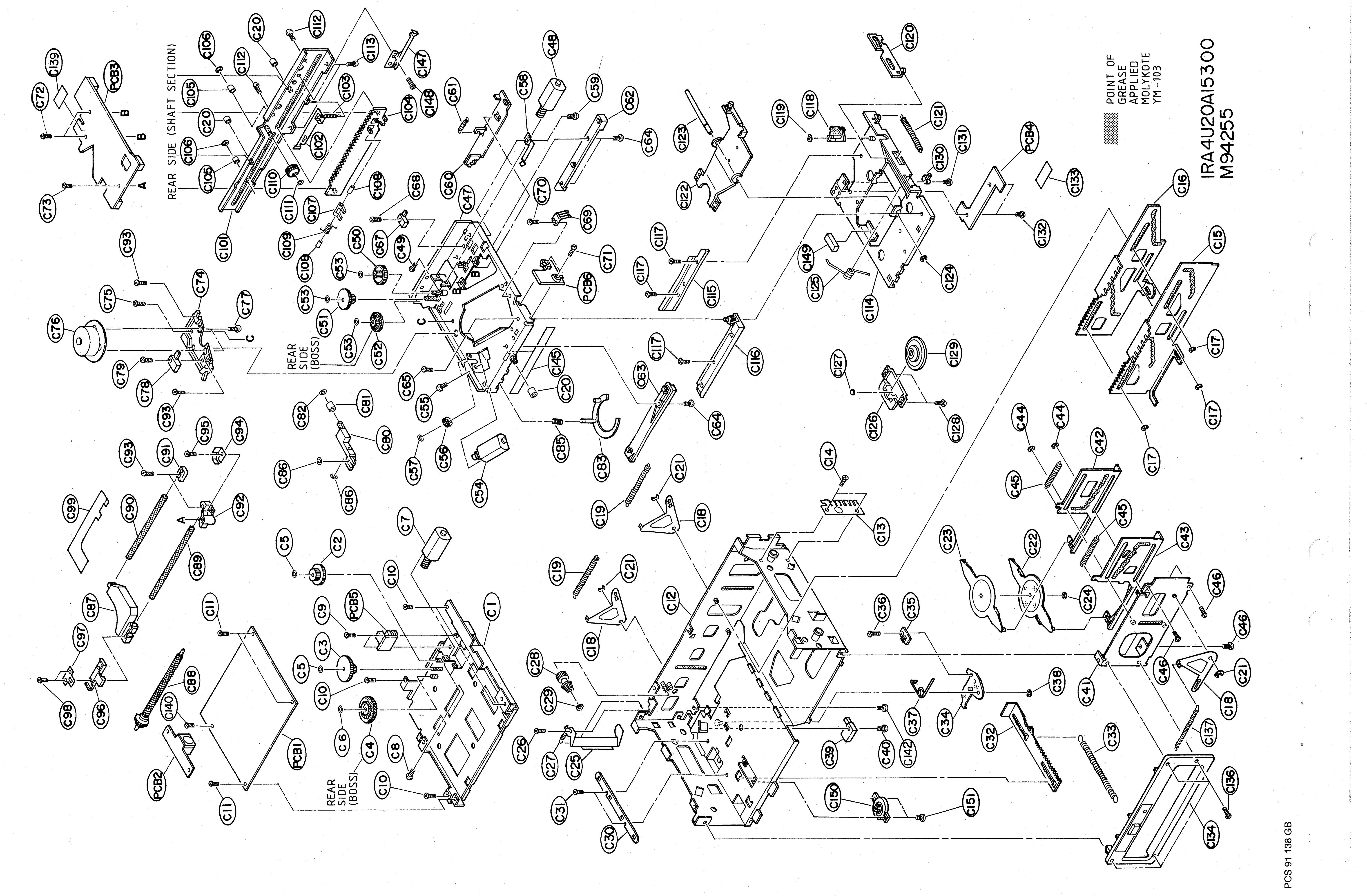
PCB LAYOUT / CONNECTIONS


CD P.C.B. BOTTOM
LIMIT SW
FEED MOTOR
CS905
DISC MOTOR
LOAD MOTOR
CLUMP SW
FPC602
TH901
D901
CS904
CS901
CP906
SENSOR P.C.B. BOTTOM
FPC603
Q901
LOAD SW
SWITCH P.C.B. BOTTOM
UP SW
LO SW
CS906
MAIN P.C.B.
PHOTO P.C.B. BOTTOM
D910
CS802
MAG. SW
CS801
CONNECT P.C.B. BOTTOM
CS505
CS501
DIN 8P CORD
IC551
RA801
CS602
Q601
IC651
IC650
RA651
IC850
IC804
IC801
IC601
X601
IC851
SW802
SW801
X801
X851
IC803
IC805
IC806
IC701
IC702
IC802
IC501
Q550
Q804
Q702
Q703
Q700
Q701
Q805
Q803
Q510
CP802
CP501
CP801
L520
D850
D809
D802
D550
D504
D502
D801
D521
D520
D601
D803
D806
D805
D851
D852
D503
D510
JP1
JP3
JP4
JP5
JP6
JP7
JP8
JP9
JP10
JP11
JP12
JP13
JP14
JP15

IRA4U20A15300
M94255

EXPLODED VIEW CD CHANGER MECHANISM / LUBRICATION OVERVIEW


C139
PCB3
C72
B
B
A
C73
REAR SIDE (SHAFT SECTION)
C106
C105
C20
C112
C106
C105
C101
C20
C112
C113
C147
C148
C103
C104
C102
C110
C111
C107
C109
C108
C109
C68
C67
C49
C50
C53
C53
C51
C53
C52
REAR SIDE (BOSS)
C
B
B
C47
C60
C61
C58
C48
C59
C62
C64
C70
C69
C71
PCB6
C65
C55
C145
C20
C63
C64
C116
C117
C115
C117
C117
C123
C122
C119
C118
C114
C125
C149
C124
C120
C121
C131
C130
PCB4
C133
C132
C16
C15
C17
C17
C17
C127
C129
C126
C128
C74
C75
C76
C77
C
C79
C78
C93
C93
C95
C94
C91
C92
A
C90
C99
C89
C87
C97
C96
C98
C88
C140
PCB2
C11
PCB1
C11
C81
C82
C80
C86
C86
C57
C56
C54
C85
C83
C5
C2
C7
C10
C9
PCB5
C3
C5
C10
C6
C4
C8
C10
C1
REAR SIDE (BOSS)
C19
C21
C18
C19
C21
C18
C14
C13
C12
C28
C29
C26
C27
C25
C31
C30
C36
C35
C37
C34
C38
C39
C40
C142
C150
C151
C32
C33
C44
C44
C42
C45
C45
C43
C23
C22
C24
C46
C46
C41
C46
C21
C18
C137
C136
C134
POINT OF GREASE APPLIED MOLYKOTE YM-103
IRA4U20A15300
M94255

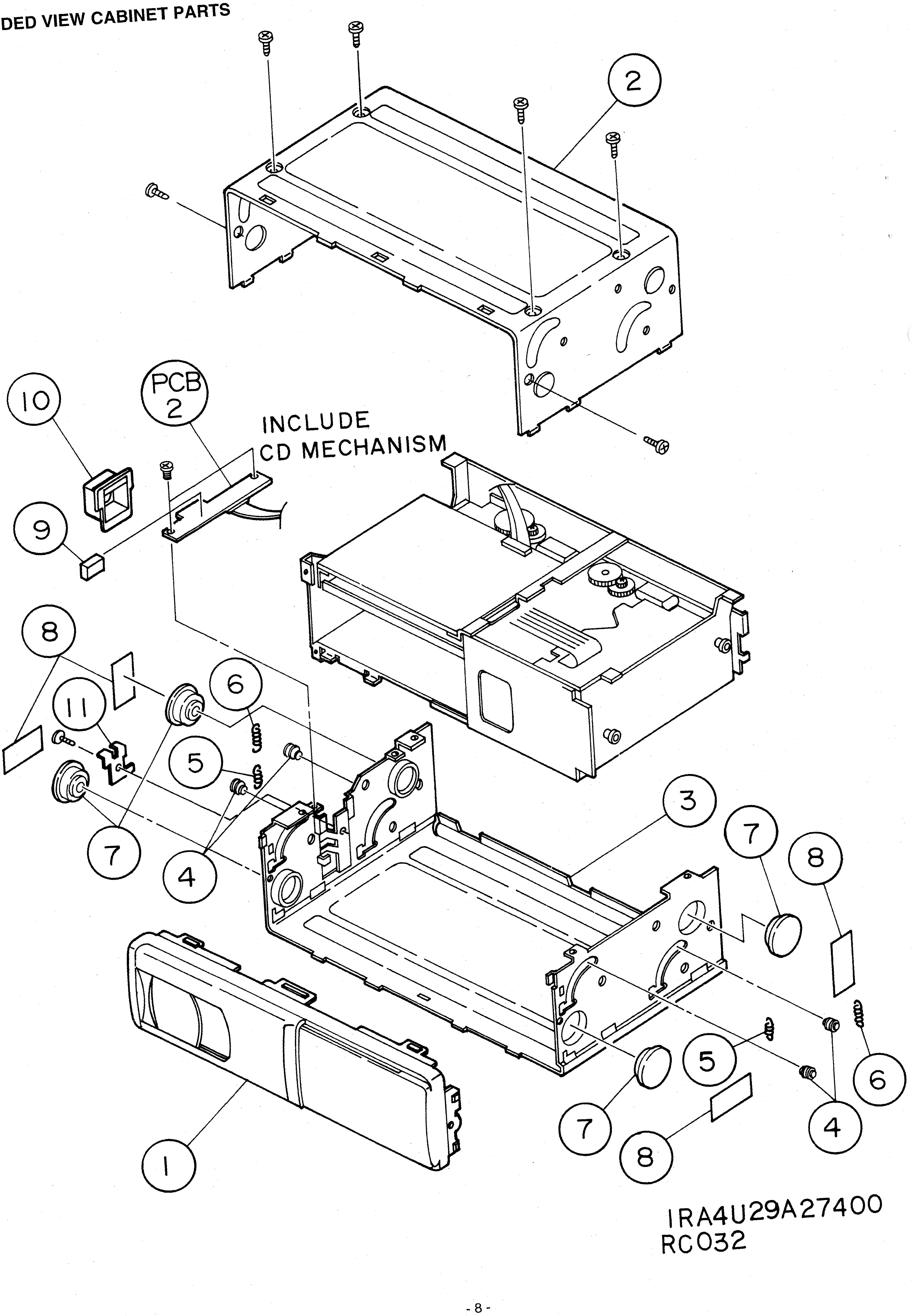
PCS 91 138 GB

MECHANICAL PARTS RC032

C2	4822 522 33508	Gear, A
C3	4822 522 33509	Gear, B
C4	4822 522 33511	Gear, C
C5	4822 532 12294	Special washer
C6	4822 532 12295	Special washer
C7	4822 361 30441	Assy DC motor
C17	4822 532 12293	Special washer
C28	4822 466 11476	Gear, plate
C29	4822 532 12295	Mount-M special washer
C39	4822 276 13547	Switch, push
C44	4822 532 12293	Special washer
C48	4822 361 30441	Assy DC motor
C50	4822 522 10595	Gear, LA
C51	4822 522 10596	Gear, LB
C52	4822 522 33514	Gear, G
C53	4822 532 12294	Special washer
C54	4822 361 10935	Assy CD feed motor
C56	4822 522 10597	Gear, FB
C57	4822 532 12735	Special washer
C67	4822 276 13547	Switch, push
C76	4822 361 10936	Assy DC motor
C78	4822 276 13547	Switch, push
C82	4822 532 12294	Special washer
C86	4822 532 12295	Special washer
C87	4822 691 10567	Pickup unit
C91	4822 535 10449	Shaft
C92	4822 502 14399	Screw
C96	4822 463 11123	Thrust, screw
C102	4822 402 61548	Lever, switch
C104	4822 402 10693	Lever assy - slide/load
C106	4822 532 12293	Special washer
C110	4822 522 33515	Gear, H
C111	4822 532 12294	Special washer
C129	4822 528 11071	Flange
C130	4822 276 13547	Switch, push
C134	4822 464 10274	Front panel for mechanism
	4822 321 62668	Cable, 2p - 160mm
	4822 320 11737	Cable, 4p - 40mm
	4822 320 11738	Cable, 5p - 90mm

Note: *all parts not mentioned here are NO service parts!*

EXPLODED VIEW CABINET PARTS


2
10
PCB 2
INCLUDE CD MECHANISM
9
8
6
11
5
7
4
3
7
8
1
5
6
7
8
4
IRA4U29A27400
RC032

PCS 91 140 GB

CABINET PARTS AND ACCESSORIES

***Note:** all parts not mentioned here are NO service parts!*

1	4822 459 04503	Front panel assy
2	4822 442 00795	Cabinet assy
3	4822 442 00796	Bottom assy
7	4822 529 10308	Damper
10	4822 462 10841	Cap for DIN connector
	4822 736 15096	Instruction manual
	4822 402 10694	Accessory part assy - left/right brackets
	4822 310 10946	Accessory part assy - bracket & adhesive tape
	4822 310 10778	Accessory part assy - brackets and bolts
	4822 321 62671	DIN extension cable 5.5m
	4822 321 62263	Rect_C10 - DIN interface cable
	4822 320 11871	Rect_C3 - DIN interface cable EA6260
	4822 691 10578	Magazine assy
	4822 502 21556	Transport screw

ELECTRICAL PARTS

***Note:** all parts not mentioned here are NO service parts!*

RC032

▶|

D502	4822 130 82557	DCC010
D503	4822 130 10782	DSB015
D504	4822 130 83633	MA704A
D510	4822 130 83765	Zener 5.6V
D520	4822 130 31533	DS135
D521	4822 130 31533	DS135
D550	4822 130 10783	Zener 8.2V
D601	4822 130 83631	DSB010
D801	4822 130 83632	Zener 5.1V
D802	4822 130 83631	DSB010
D803	4822 130 83637	DCB010
D805	4822 130 83637	DCB010
D806	4822 130 83631	DSB010
D809	4822 130 10784	DCA010
D850	4822 130 80273	Zener 8.2V
D851	4822 130 10657	Zener 5.6V
D852	4822 130 10657	Zener 5.6V
D901	4822 130 10114	LED SLR-989A-AB
D910	4822 130 83766	Photo coupler GP1S51V

⊗

Q510	4822 130 60753	2SC2812-L6
Q550	4822 130 10786	2SD2199S-TSD-DR
Q601	4822 130 10787	2SA1338-6
Q700	4822 130 90323	DTC114TK
Q701	4822 111 90813	UN2113
Q702	4822 130 90323	DTC114TK
Q703	4822 130 90323	DTC114TK
Q803	4822 130 63551	DTC124XK
Q804	4822 130 62912	2SB1202(ST)
Q805	4822 130 10785	2SA1179-M6
Q901	4822 130 63655	Photo diode PT4850F

▭

IC501	4822 209 33241	MC147805AUT
IC551	4822 209 33094	L78M05T
IC601	4822 209 15225	LC78620E-D
IC650	4822 209 15227	LA9240M servo
IC651	4822 209 15228	BA6999FP
IC701	4822 209 15226	PCM1710U
IC702	4822 209 30455	NJM2100M
IC801	4822 209 15229	LC66566B-4H90
IC802	4822 209 63631	S-8054HN-CB
IC803	4822 209 15203	PST9138N
IC804	4822 209 32984	TC7SU04F
IC805	4822 209 32984	TC7SU04F
IC806	4822 209 72397	TC4S71F
IC850	4822 209 33758	LB1644
IC851	4822 209 32743	MSM6307GS

MISCELLANEOUS

CS505	4822 267 31758	DIN socket
L520	4822 157 11124	SK 5mH
SW801	4822 276 13828	Eject switch
SW802	4822 276 13548	Reset switch
TH901	4822 111 92201	Thermistor NTH4G42B104EB
X601	4822 242 81702	Crystal 16.9344MHz
X801	4822 242 73769	Ceramic resonator 4.190MHz
X851	4822 242 10678	Ceramic resonator 5.75MHz
	4822 276 13547	UP switch
	4822 276 13547	LOW switch

Car CD changer 22RC026/00

PHIL-05230

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ERSATZTEILE
für Philips Car Systems
erhalten Sie bei:
KiVi
KiVi Service GmbH
Windmühlenstr. 41 · 31178 Giesen/Emmerke
Tel.: 0 51 21 / 6 00 20 · Fax 0 51 21 / 60 02 54

Service Manual

12 V ⊖|▸

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COMPACT
DISC
DIGITAL AUDIO

CLASS 1
LASER PRODUCT

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SPECIFICATIONS

Power supply	: 13.2VDC (nom.) : 16.0VDC (max.)
Frequency response	: 20-20,000 Hz (± 1dB)
DAC resolution	: 1 bit per channel
Bus interface	: D²B
Crosstalk L<>R	: ≤ -75dB
S/N ratio	: 96dB (A-weighted)
Distortion	: ≤ 0.01% (at 1kHz)
Data - Track mute	: ≥ 93dB (A-weighted)
Wow and flütter	: unmeasurable
Output voltage	: 700mV
Operating positions	: Horizontal/Vertical/45°
Weight	: 2 kg
Dimensions (HxWxD)	: 66 x 259 x 175 mm

SERVICE

IMPORTANT !! **!! IMPORTANT**

- When disassembling, ALWAYS protect the pick-up unit against ESD damage by closing the solder connection of the pick-up unit either on the CD panel or the flexible foil pcb!
  (See also the repair notes and disassembly procedures described in this manual.)
- New pick-up units are supplied with CLOSED solder connections on the flexible foil pcb.
  Do NOT forget to remove the solder connection AFTER replacing the unit!

SERVICE HINTS

- To prevent magazine check (duration approx. 30-40 sec.), insert the magazine and press the 'eject' button SIMULTANEOUSLY. In that case disc no.1 is loaded and the set comes into 'Standby' mode.
- Use (home-made) extension cables of approx. 30 cm to get access to the bottom side of the main pcb for measuring purposes. Two extension cables (a 2-pole and a 5-pole one) are required. To make these cables, the following parts can be ordered and used for making the extension cables:
  CS801 - cable assy 2-pole - 4822 321 62668
- CS802 - cable assy 5-pole - 4822 320 11738
- The set can also operate without cover, but take care of the following measures:
  - ABSOLUTELY NEVER PERMIT LASER BEAMS TO ENTER THE EYES
  - DO NOT EXPOSE THE SET TO BRIGHT (SUN)LIGHT
- When the CD changer has a defect while the magazine is still in, the magazine can be removed by moving the emergency eject lever to the right by a small screwdriver, as shown in figure 1 below. First the protection sheet has to be removed. DO NOT FORGET to put the sheet back, to prevent dust intrusion! When a disc is chucked, turn the gear to the right until the slide lever reaches to the edge of the left side (see figure 2).

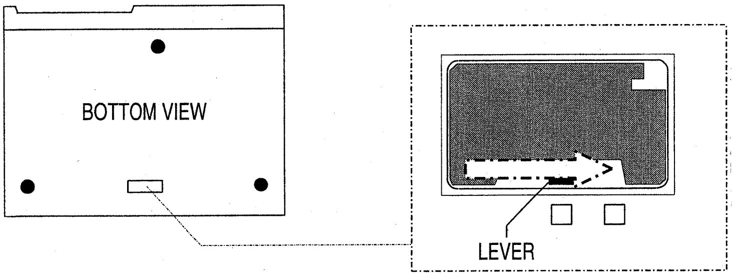


Figure 1

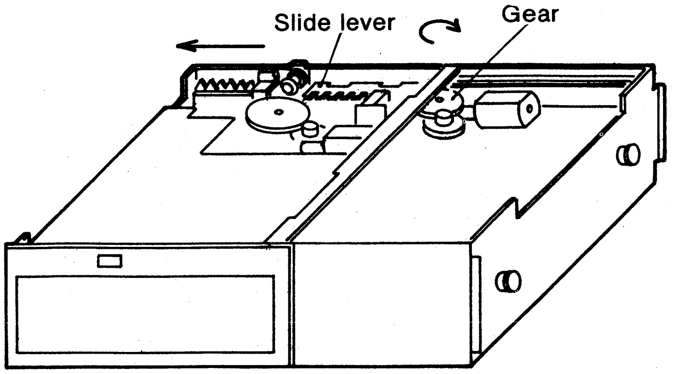
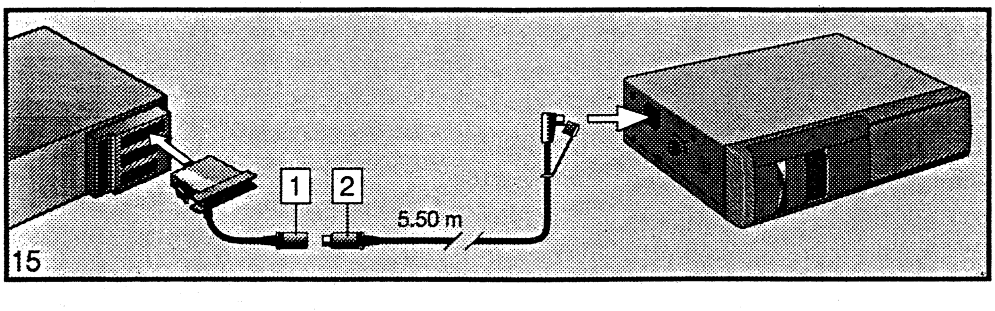


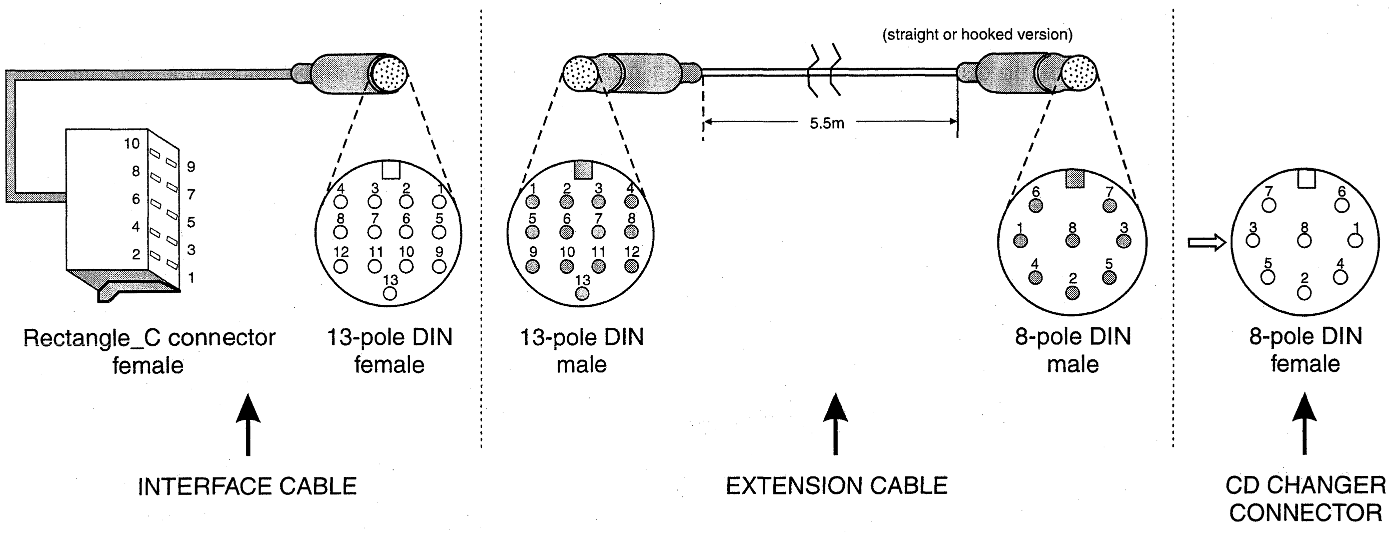
Figure 2

INTERFACE CABLE CONNECTIONS



INTERFACE CABLE CONNECTIONS (continued)

The figure below shows the pin layout of the connections of the interface cable (service 12nc: **4822 321 62263**) and the extension cable (service 12nc: **4822 321 62671**).
All connections here are seen from the *front* side of the connectors.


(straight or hooked version)
5.5m
Rectangle_C connector female
13-pole DIN female
13-pole DIN male
8-pole DIN male
8-pole DIN female
INTERFACE CABLE
EXTENSION CABLE
CD CHANGER CONNECTOR

RECTANGLE_C CONNECTOR

Pin	**Signal**
1	BUS_GND
2	D^2B +
3	D^2B -
4	N.C.
5	+ 12V PERM.
6	GND
7	+ 12V SW.
8	R_CH
9	L_CH
10	SIGN_GND
(SHIELD)	(GND)

13-POLE DIN CONNECTOR

Pin	**Signal**
1	SIGN_GND
2	L_CH
3	SIGN_GND
4	R_CH
5	GND
6	N.C.
7	+ 12V SW.
8	+ 12V PERM.
9	BUS_GND
10	N.C.
11	D^2B +
12	D^2B -
13	N.C.
SHIELD	GND

8-POLE DIN CONNECTOR

Pin	**Signal**
1	+ 12V SW.
2	+ 12V PERM.
3	GND
4	D^2B -
5	D^2B +
6	R_CH
7	L_CH
8	SIGN_GND
SHIELD	GND

FUNTIONAL EXPLANATION

1. APC (Auto laser power control)
   This is the circuit to control laser power of pickup, and laser ON/OFF is set by command from micro computer.

2. RF Amplifier (I pattern output)
   This inputs pickup photo diode output current (A+C) to FIN2 (1pin), and (B+D) to FIN1 (2pin). Input current is IV-converted, and output to RFSM (41pin) of RFSM amplifier output by way of AGC circuit. Self-contained AGC circuit has variable range of ±3dB, and the time constant can be varied by outside-fixed condenser of PH1 (60pin). This also controls bottom level of EFM signal (RFSM output), and this response can be varied by outside-fixed condenser of BH1 (61pin). Central gain of AGC variable range is set by resistance value between RFSM (41pin) and RFS-(42pin).

3. SLC (Slice level control)
   SLC makes duty of EFM signal which is input to DSP 50%. This judges duty, and decides DC level by integrating EFMO signal which is output from DSP.

4. Focus servo
   Focus error signal can be gained by detecting the difference between (A+C) and (B+D), which is (B+D)-(A+C), and it is sent to FE (20pin). Focus error signal gain is set by resistance value between FE (20pin) and FE-(21pin).
   FA amplifier is phase compensating Amplifier, and the equalizer curve is set by outside-fixed condenser and resistance. Besides, this amplifier has muting function.
   FD amplifier has the following functions; phase compensating circuit, focus search signal synthesis, and offset cancelling. Focus search starts by F-SERCH command, and generates lamp waveshape by inner clock. Focus error signal by this waveshape detects in-focus condition (focus zero cross), and turns on focus servo. Lamp waveshape amplitude is set by resistance between FD (16pin) and FD-(17pin).

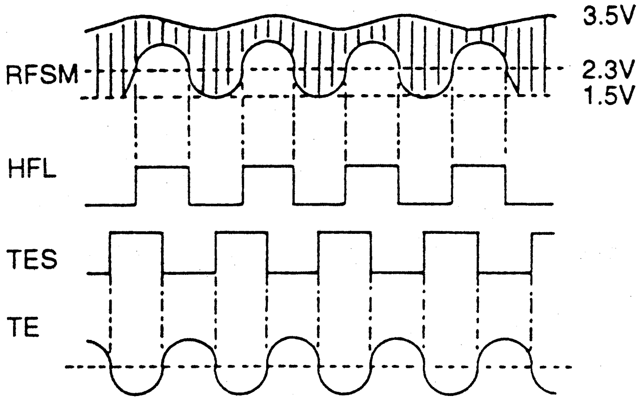
5. Tracking servo
   This inputs pickup photo diode output current to E (3pin) and F (4pin). Input current is IV-converted, and output to TE (7pin) by way of VCA circuit for balance adjustment and VCA circuit for follow-up to RFAGC circuit. Tracking error gain is set by resistance between TE-(6pin) and TE (7pin).
   TOFF amplifier just after TE (7pin) turns off servo by TOFF signal from DSP.
   TH amplifier varies servo response characteristic by TGL signal from DSP. or by THLD signal of inside formation by detecting JP signal. When DEFECT is detected, inside mode changes into THLD. This can be avoided by causing short circuit in DEF (49pin) to "L"=GND. In case of detection, gain can be automatically up by configulating outside DCI (9pin) band pass filter which picks up only shock element out of tracking error signals and putting it in.
   TO amplifier has the function of synthesizing JP pulse and cancelling tracking offset. JP pulse is set by JP (14pin) (THLD is detected inside).

6. Sled servo
   SLEQ (28pin) sets response characteristic. Amplifier after SLEQ (28pin) has muting function, and mutes SLOF (38pin) by "H" or SLED OFF command. Sled feed is operated by means of current input to SL-(30pin) and SL+(31pin), that is, by connecting to output port of micro computer by resistance and setting feeding gain by the resistance value.

7. Spindle servo
   This configurates, together with DSP, servo circuit to keep disc linear velocity at a scheduled level. This receives signal from DSP by CV-(39pin) and CV+(40pin), and sets equalizer characteristic by SP (23pin), SP-(36pin) and SPD (27pin) which output to SPD (27pin). SPG (25pin) is set by resistance with which amplifier gain of 12cm mode is connected to standard voltage.

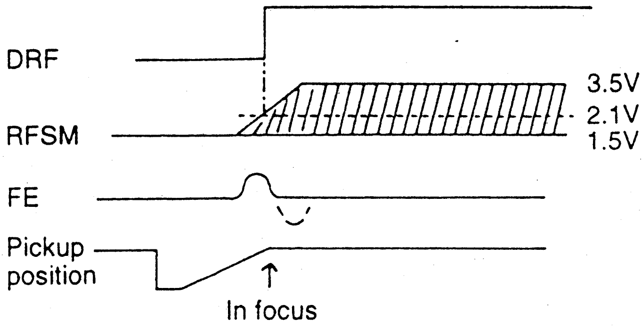
8. TES, HFL (Traverse signal)

In transferring pickup from inner track to outer track, EF output from pickup should be so connected that HFL and TES have phase relation as shown in the figure below. TES comparator has about ±100mV hysteresis at -polarity comparator against TESI input. To pickup exclusively necessary signals out of TE signals, band pass filter is configurated outside.



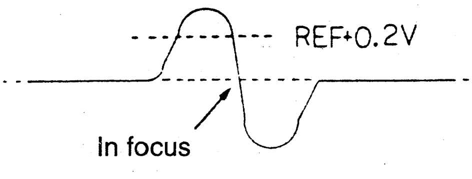
9. DRF (Beam level judgement)

DRF becomes "H", when EFM signal (RFSM output) is held at peak value by condenser of PH1 (60pin) and peak value of RFSM gets over 2.1V. Condenser of PH1 (60pin) is related to setting both DRF constant when detected and RFAGC response.



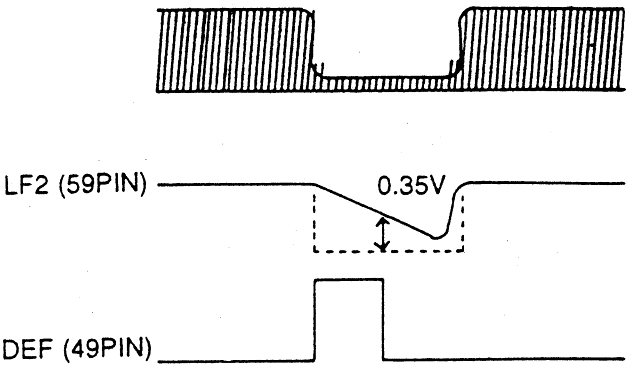
10. In-focus judgement

This detects DEF+0.2V of focus error signal S curve, and then judges focus zero cross (being in focus) when S curve becomes REF.



11. DEFECT

This normally maintain mirror surface level by condenser of LF2 (59pin), and when lack of EFM signal (RFSM output) gets over 0.35V, outputs "H" to DEF (49pin). When DEF (49pin) becomes "H", tracking servo changes into THLD mode.



12. Reset circuit

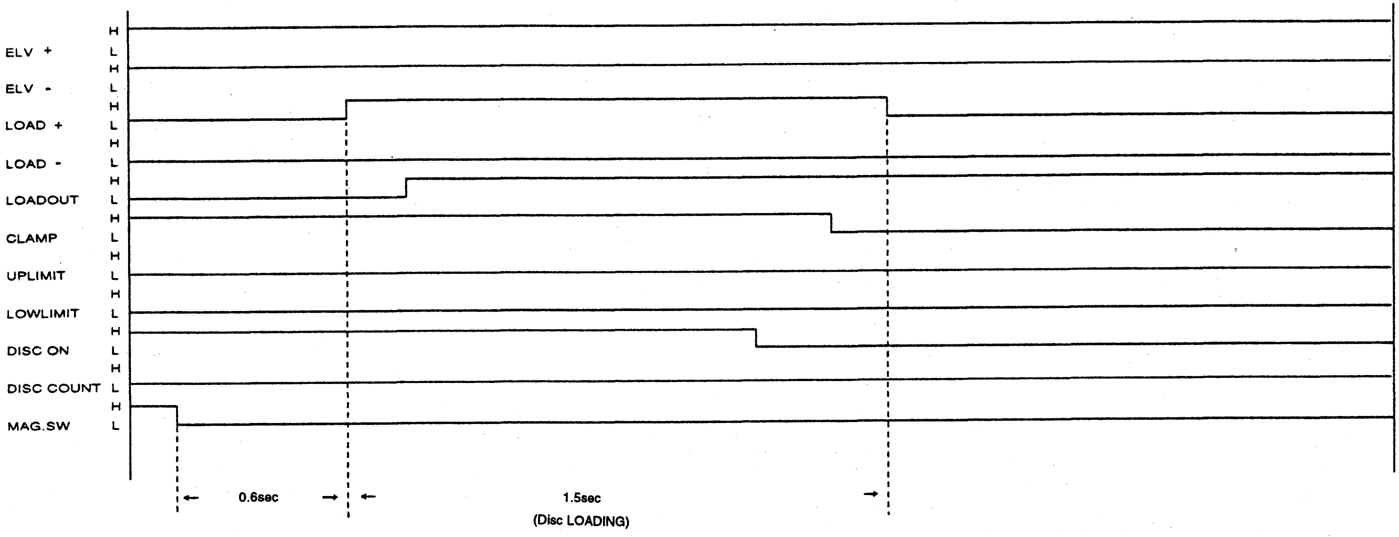
When Vcc gets over about 2.8V, Power on Reset is cancelled.

PCS 82 441

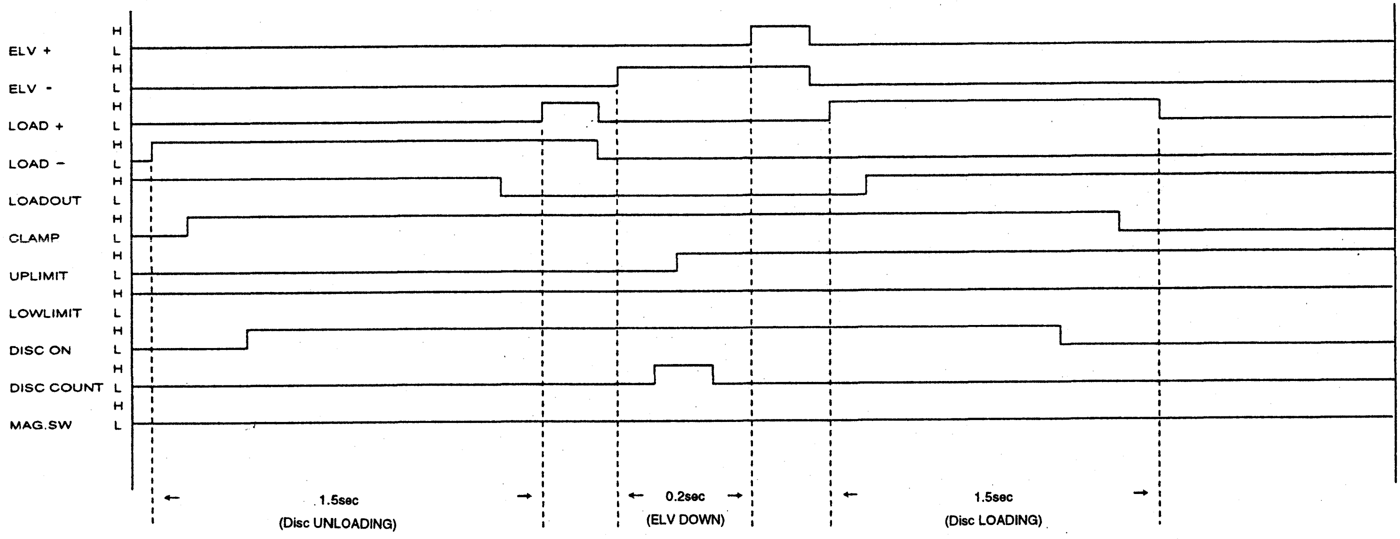
FUNCTIONAL EXPLANATION

Mechanical Timing

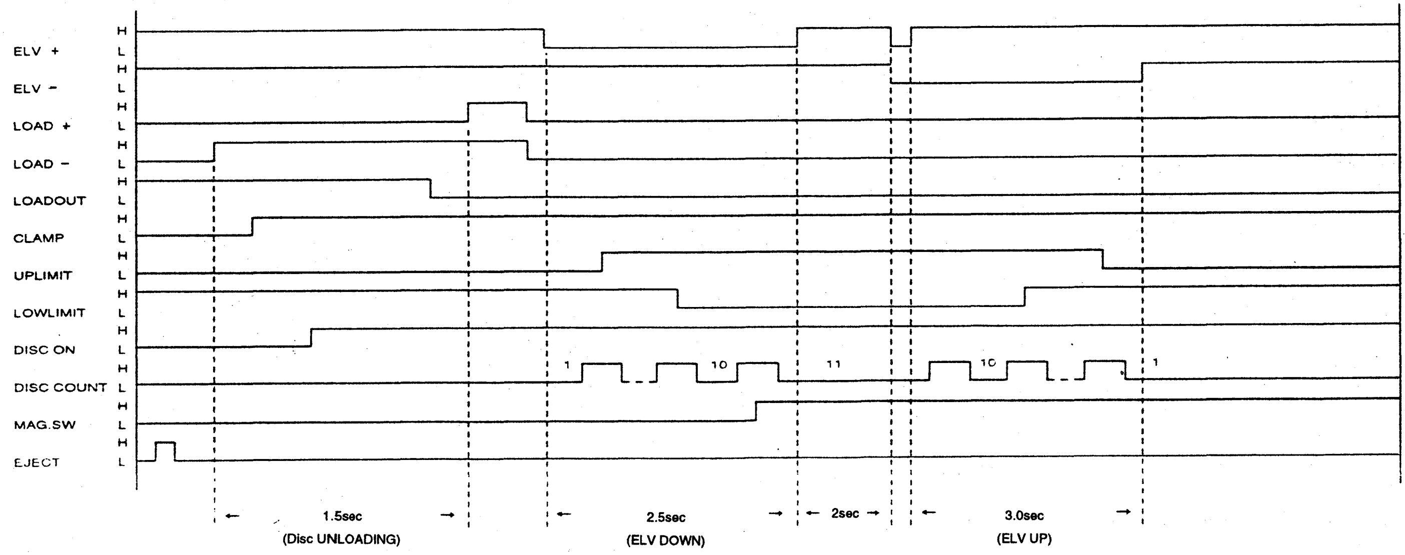
MAG IN


ELV +
ELV -
LOAD +
LOAD -
LOADOUT
CLAMP
UPLIMIT
LOWLIMIT
DISC ON
DISC COUNT
MAG.SW
H
L
0.6sec
1.5sec
(Disc LOADING)

DISC CHANGE(DISC1→2)


ELV +
ELV -
LOAD +
LOAD -
LOADOUT
CLAMP
UPLIMIT
LOWLIMIT
DISC ON
DISC COUNT
MAG.SW
H
L
1.5sec
(Disc UNLOADING)
0.2sec
(ELV DOWN)
1.5sec
(Disc LOADING)

MAG EJECT(DISC1 PLAY)


ELV +
ELV -
LOAD +
LOAD -
LOADOUT
CLAMP
UPLIMIT
LOWLIMIT
DISC ON
DISC COUNT
MAG.SW
EJECT
H
L
1
10
11
10
1
1.5sec
(Disc UNLOADING)
2.5sec
(ELV DOWN)
2sec
3.0sec
(ELV UP)

NOTES REGARDING COMPACT DISC PLAYER REPAIRS

(1) Preparations

1) Compact disc players incorporate a great many ICs as well as the pickup (laser diode). These components are sensitive to , and easily affected by , static electricity. If such static electricity is high voltage, components can be damaged, and for that reason components should be handled with care.

2) The pickup is composed of many optical components and other high-precision components. Care must be taken, therefore, to avoid repair or storage where the temperature of humidity is high, where strong magnetism is present, or where there is excessive dust.

(2) Notes for repair

1) Before replacing a component part, first disconnect the power supply lead wire from the unit.

2) All equipment, measuring instruments and tools must be grounded.

3) The workbench should be covered with a conductive sheet and grounded.
When removing the laser pickup from its conductive bag, do not place the pickup on the bag. (This is because there is the possibility of damage by static electricity.)

4) To prevent AC leakage, the metal part of the soldering iron should be grounded.

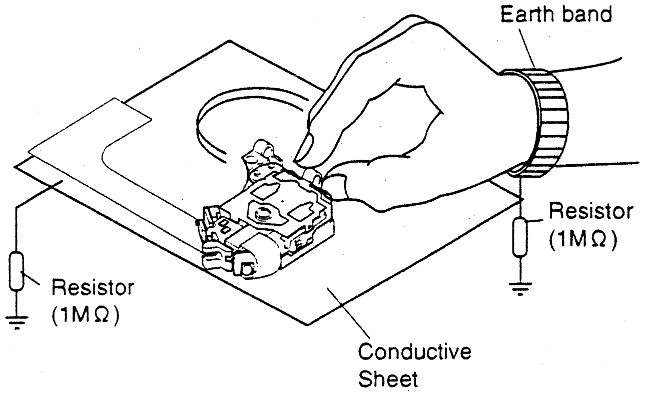
5) In removing short circuit solder of LASER PICKUP, use ceramic heater type of soldering iron.

6) Workers should be grounded by a earth band (1MΩ).

7) Care should be taken not to permit the laser pickup to come in contact with clothing, in order to prevent static electricity changes in the clothing to escape from the earth band.

8) The laser beam from the pickup should NEVER be directly facing the eyes or bare skin.

Countermeasure of electrostatic



NOTES REGARDING HANDLING OF THE PICKUP

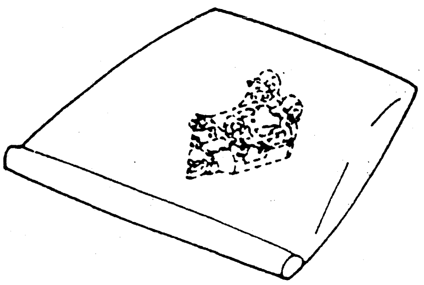
(1) Notes for transport and storage

1) In retaining the product, high temperature, high humidity and dusty circumstances must be avoided. After taking it out of packing box, never leave it at the place where dust can occur. (Take every possible preventive means against dust.)

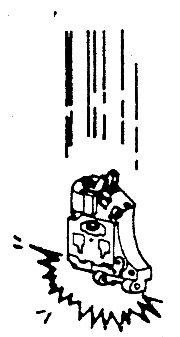
2) The pickup should always be left in its conductive bag until immediately prior to use.

3) As this is minutely adjusted, be careful never give it any shock from drop or careless handling.

Storage in conductive bag

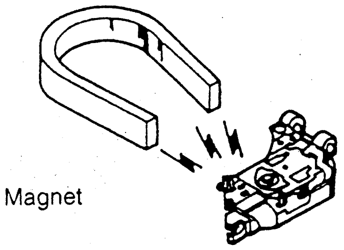


Drop impact



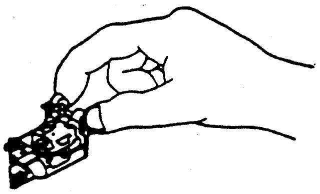
(2) Repair notes

1) The pickup incorporates a strong magnet, and so should never be brought close to magnetic materials.



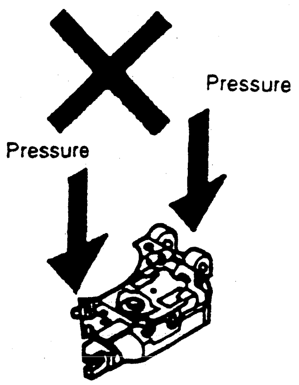
NOTES REGARDING HANDLING OF THE PICKUP

2) The pickup should always be handled correctly and carefully, taking care to avoid external pressuer and impact. If it is subjected to strong pressure or impact, the result may be an operational malfunction and/or damage to the printed circuit boaed.



How to hold the pickup

Grabbing print circuit board or pulling connecting wire causes function deterioration or failure. Be sure to hold the whole housing.



3) If LASER PICKUP or MECHA ASSY is set or reset with power supplied. LASER DIODE or PHOTO DETECTOR is damaged. Be sure to turn off power supply switch before setting or resetting LASER PICKUP or MECHA ASSY.

4) To prevent LASER DIODE or PHOTO DETECTOR from being deteriorated or damaged by static electricity, be sure to thoroughly practice earthing as a preventive means against damage from static electricity.

5) Take every possible means against damage of LASER DIODE or PHOTO DETECTOR from overcurrent or overvoltage. (Example—Use power source equipped with current limiter.)

6) If fingerprint or any other foreign material is attached on objective lens, the function is extremely deteriorated. Be sure never to touch objective lens. Particularly, be very careful in removing or fitting lens cover.

7) PICKUP is a single part, and very minutely adjusted as such. Therefore, never touch any of adjustment points, fixing screws or print circuit board of PICKUP.

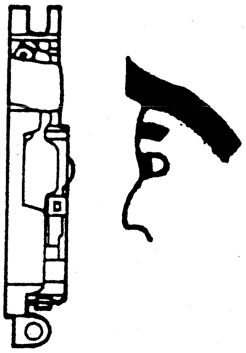
   (1) If you touch partially fixed volume soldered on circuit board (beam quantity adjusting volume), emitted beam quantity (RF LEVEL) can change. Never touch partially fixed volume.

   (2) If there occurs even a very small shift in the circuit board fixture position, the function greatly changes. In handling LASER PICKUP, be very careful to hold metal part of housing (HOUSING).

8) If metal part of adjusting rod or driver touches circuit board when power is supplied, it can cause failure. Be careful.

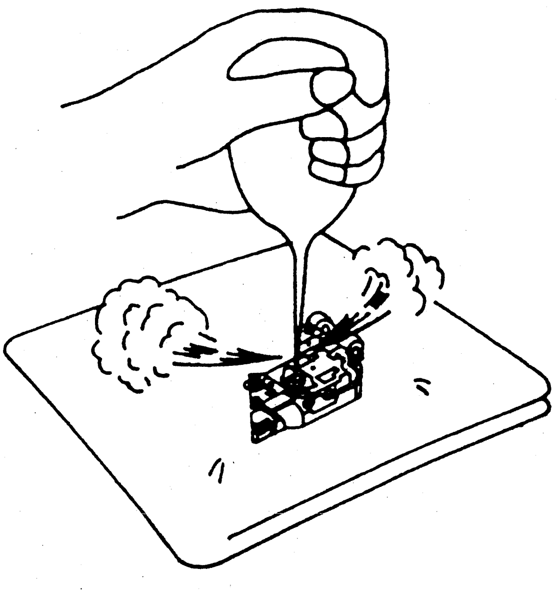
9) Laser beam may damage the eyes!
Absolutely never permit laser beams to enter the eyes! Also NEVER switch ON the power to the laser output part (lens, etc.) of the pickup if it is damaged.

LaserBeam



NEVER look directly at the laser beam, and don't let contact fingers or other exposed skin.

10) Cleaning the lens surface
If there is dust on the lens surface, the dust should be cleaned away by using an air brush (such as used for camera lens). The lens is held by a delicate spring.

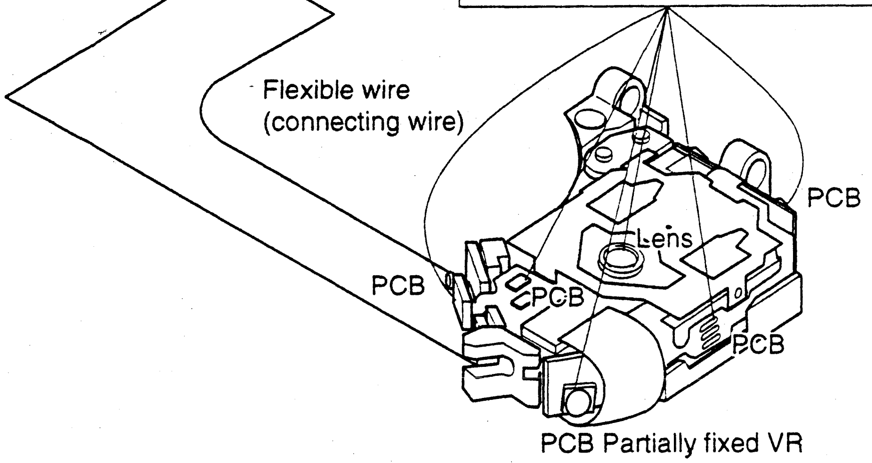


Conductive Sheet

11) Never attempt to disassemble the pickup.

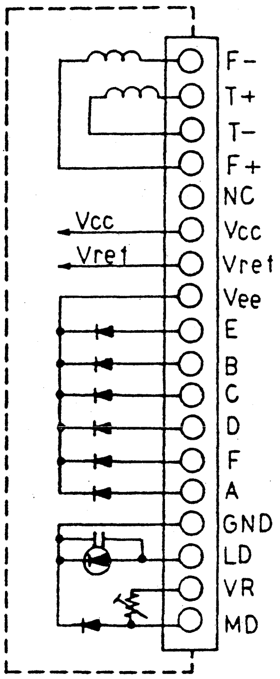
NOTES REGARDING HANDLING OF THE PICKUP

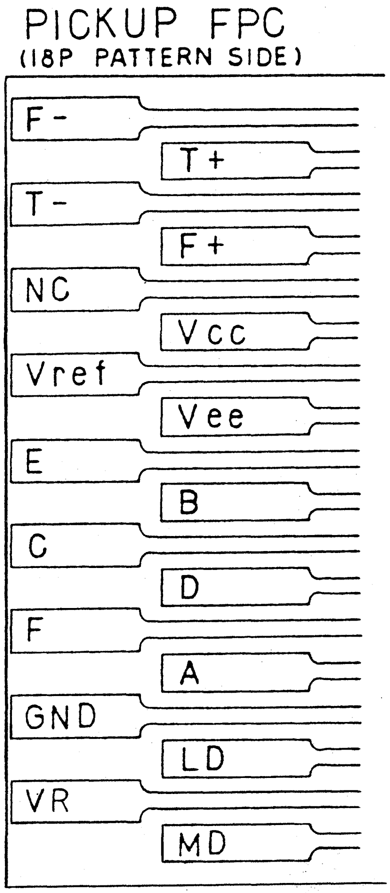
Touching this part can cause function deterioration. Please be careful never to touch this part.


Flexible wire
(connecting wire)
PCB
Lens
PCB
PCB
PCB
PCB Partially fixed VR

Holding and pulling flexible wire can cause breaking of wire. Please be sure to hold the housing itself in handling

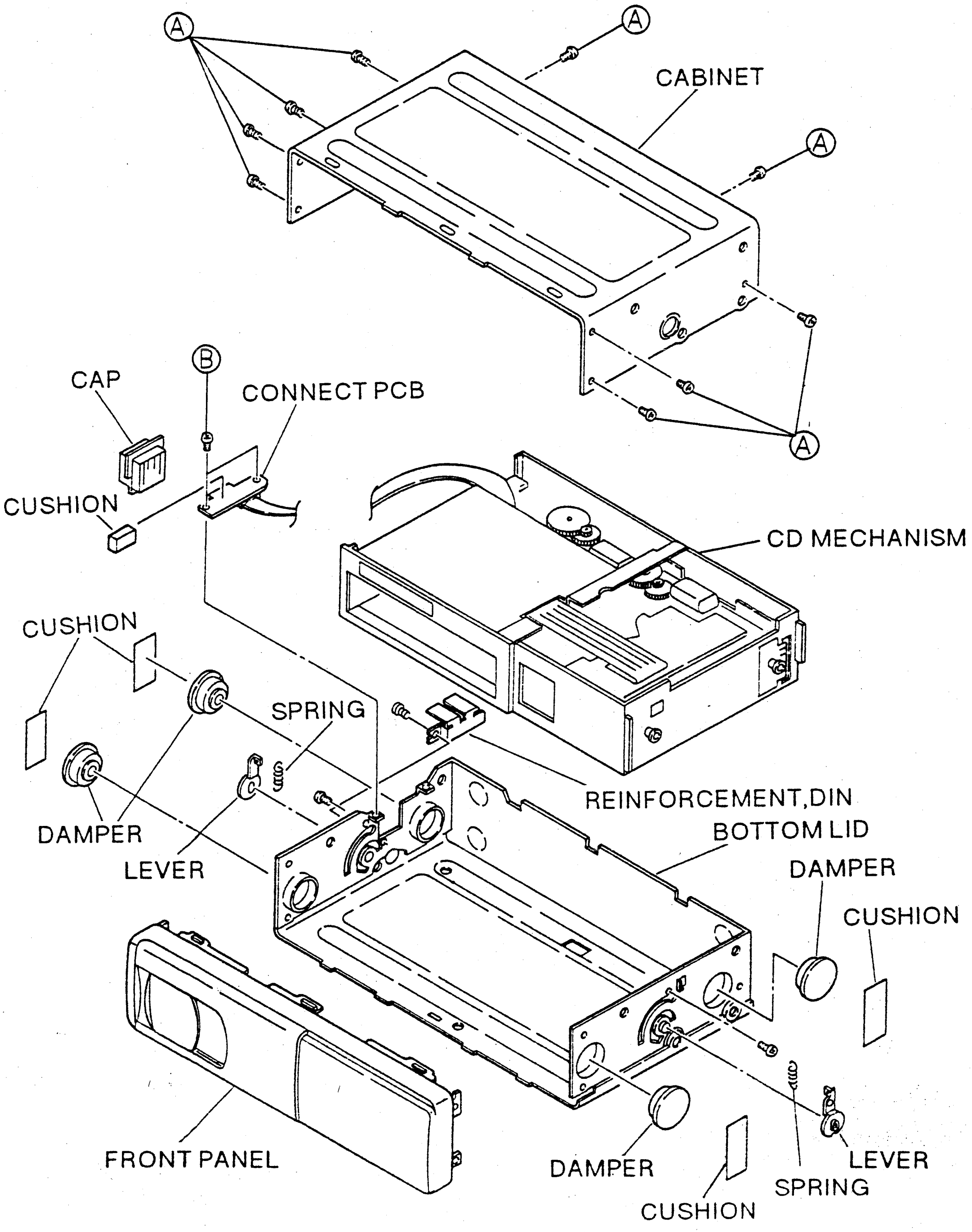
PICKUP DETAIL


F-
T+
T-
F+
NC
Vcc
Vref
Vee
E
B
C
D
F
A
GND
LD
VR
MD
Vcc
Vref


PICKUP FPC
(18P PATTERN SIDE)
F-
T+
T-
F+
NC
Vcc
Vref
Vee
E
B
C
D
F
A
GND
LD
VR
MD

DISASSEMBLY

1. Remove 9 screws Ⓐ securing the cabinet.
2. Remove the cabinet with pushing the front panel stopper.
3. Remove the front panel with pushing the both bottom lid stopper.
4. Remove 2 screws Ⓑ and the connector Ⓒ Connect P.C.B. can be removed.
5. Remove the cushion.
6. Remove the damper.
7. If remove the spring Ⓓ installed between the mechanism and the chassis, also mechanism can be removed.


Ⓐ
Ⓐ
CABINET
Ⓐ
Ⓐ
Ⓑ
CAP
CONNECT PCB
CUSHION
CD MECHANISM
CUSHION
SPRING
REINFORCEMENT,DIN
BOTTOM LID
DAMPER
LEVER
DAMPER
CUSHION
FRONT PANEL
DAMPER
LEVER
SPRING
CUSHION

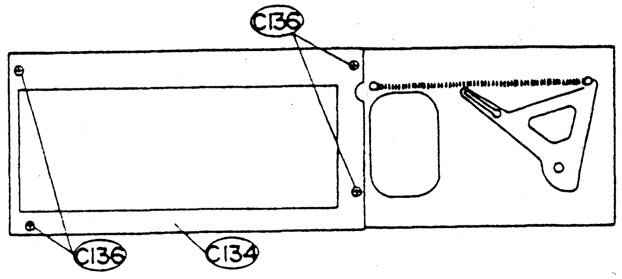
PCS 82 446

CD MECHANISM

1) How to remove the ELEVATOR MOTOR, FEED MOTOR and the LORDING MOTOR.

(1) How to remove the FEED MOTOR.

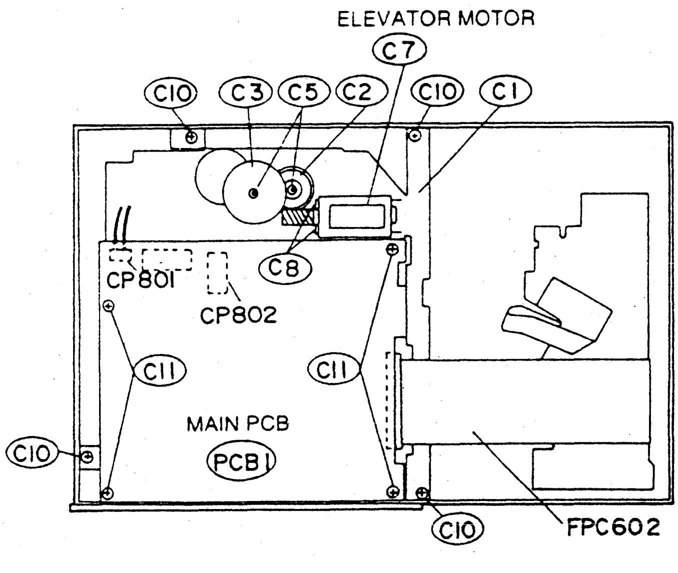
1. Short the short-pattern of FPC, PU C99 with solder.
2. Remove the two screws (SCR S-TPG PAN PCS 2 ×3) C136 which fasten the MECHA-PANEL C134. The MECHA-PANEL can be removed.
3. Remove the four screw (SCR S-TPG PAN PCS 2× 4) C11 which fasten the MAIN PCB PCB1.
4. Remove the connectors (CP801 and CP802).
5. Only when you will also remove the ELEVATOR MOTOR, remove FPC602.
6. Remove the five screws (SCR TPG PAN PCS 2× 4) C10 which fasten the TOP CHASSIS C1. The TOP CHASSIS can be removed.
7. Remove the two screw (SCR S-TPG PAN PCS 2× 2.5) C55 which fasten the FEED MOTOR C54.



MECHA-PANEL

(2) How to remove the ELEVATOR MOTOR.

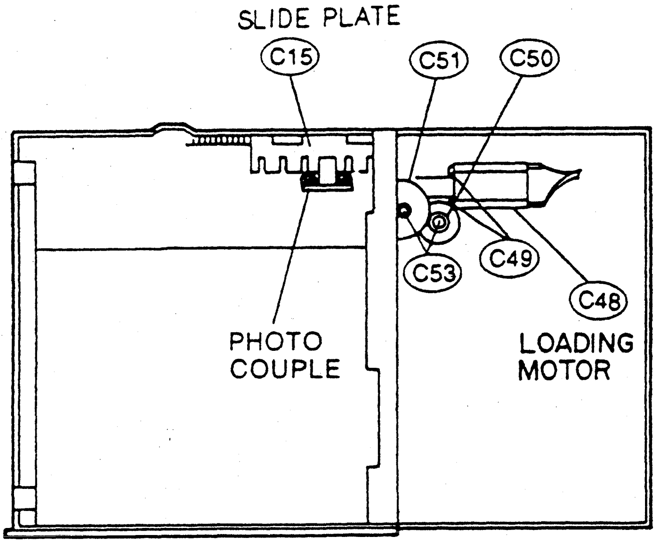
1. Remove the SPECIAL WASHER C5 which fasten the GEAR A C2 and the GEAR B C3. The GEAR A and the GEAR B can be removed.
2. Remove the two screws (SCR S-TPG PAN PCS 2× 2.5) C8 which fasten the ELEVATOR MOTOR C7. The ELEVATOR MOTOR can be removed.



DISASSEMBLY

(3) How to remove the LOADING MOTOR.

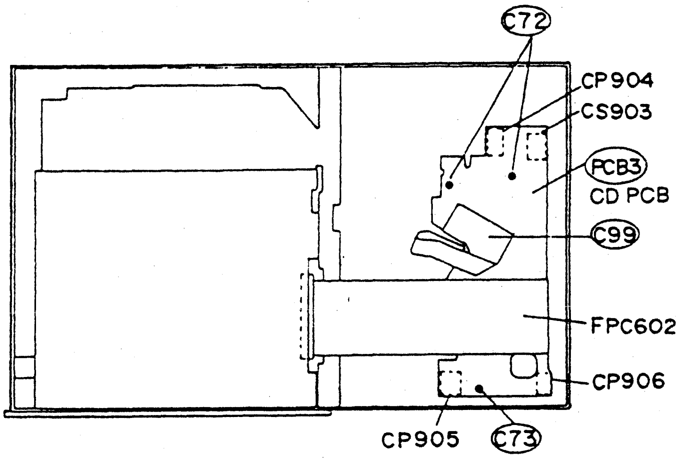
1. Remove the SPECIAL WASHER (C53) which fasten the GEAR LA (C50) and GEAR LB (C51). The GEAR LA and GEAR LB can be removed.
2. Moving the slide plate C (C15) to the right, lower the elevator to the third slot position.
3. Remove the two screws (SCR S-TPG PAN PCS 2× 2.5) (C49) which fasten the LOADING MOTOR (C48). The LOADING MOTOR can be removed.



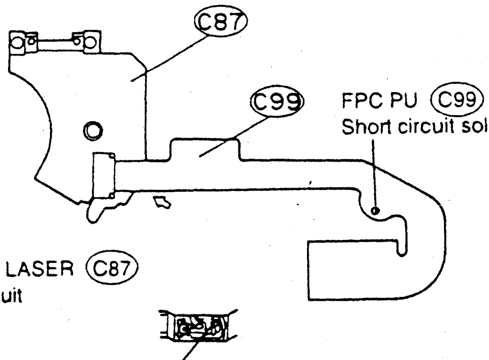
2) How to remove the PICKUP and the SPINDLE MOTOR.

(1) How to remove the CD PCB and PICKUP.

1. Short the short-pattern of FPC, PU (C99) with solder.
2. Remove CS903, FPC602, CP904, CP905 and CP906 from the connector.
3. Remove the two screws (SCR S-TPG PAN PCS 2× 4) (C72) and one screws (SCR S-TPG BIN 2×7) (C73) which fasten the CD PCB (PCB3).



4. Remove the screw (SCR S-TPG BIN 2×7) (C79) which fix INSIDE SWITCH (C78).
5. Remove the two screws (SCR PAN PCS 1.7×3.5) (C98), and THRUST, SCREW (C96), PLATE, SLIDE (C97) will come off.
6. Remove the two screws SPECIAL SCREW (C93) which fix SHAFT, PICKUP, A (C89).
7. Remove the SHAFT, PICKUP, A (C89) from the PICKUP, LASER (C87).
   The PICKUP, LASER (C87) can be removed.
8. Cause short circuit by soldering in PICKUP, LASER (C87).
9. Remove FPC, PU (C99) off CONNECT, and CD P.C.B (PCB3) come off.



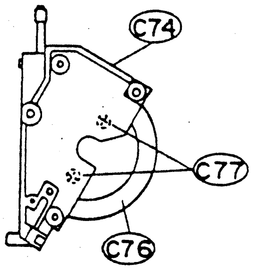
FPC PU (C99)
Short circuit soldering.

PICKUP, LASER (C87)
short circuit
position.

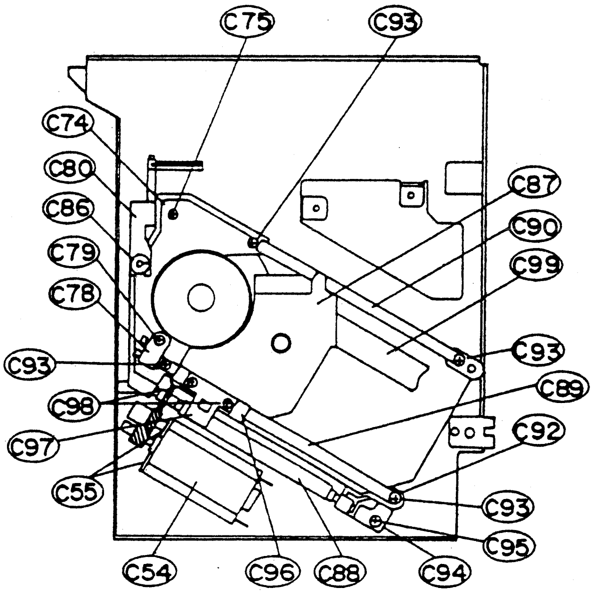
Cause short circuit on the PICKUP, LASER (C87)
side by soldering, and remove
FPC PU (C99) off PICKUP, LASER (C87).

(2) How to remove the SPINDLE MOTOR.

1. Remove the screw (SCR S-TPG PAN PCS 2×4) (C95) which fix MOUNT-M, SCREW (C92) and SPRING, PLATE, SCREW (C94).
   Remove the ASSY, SHAFT, SCREW (C88).
2. Remove the two screws SPECIAL SCREW (C93) which fix SHAFT, PICKUP, B (C90).
3. Remove the screw (SCR S-TPG PAN PCS 2×4) (C75) which fix CHASSIS, SPINDLE (C74).
4. Remove SPECIAL WASHER (C86) which fix LEVER, DISC (C80).
5. Remove the screw (SCR PAN PCS 1.7×2.2) (C77), and SPINDLE MOTOR (C76) will come off.



SPINDLE MOTOR


C75
C93
C74
C80
C86
C79
C78
C93
C98
C97
C55
C87
C90
C99
C93
C89
C92
C93
C95
C54
C96
C88
C94

FEED MOTOR

IC CIRCUIT DESCRIPTION

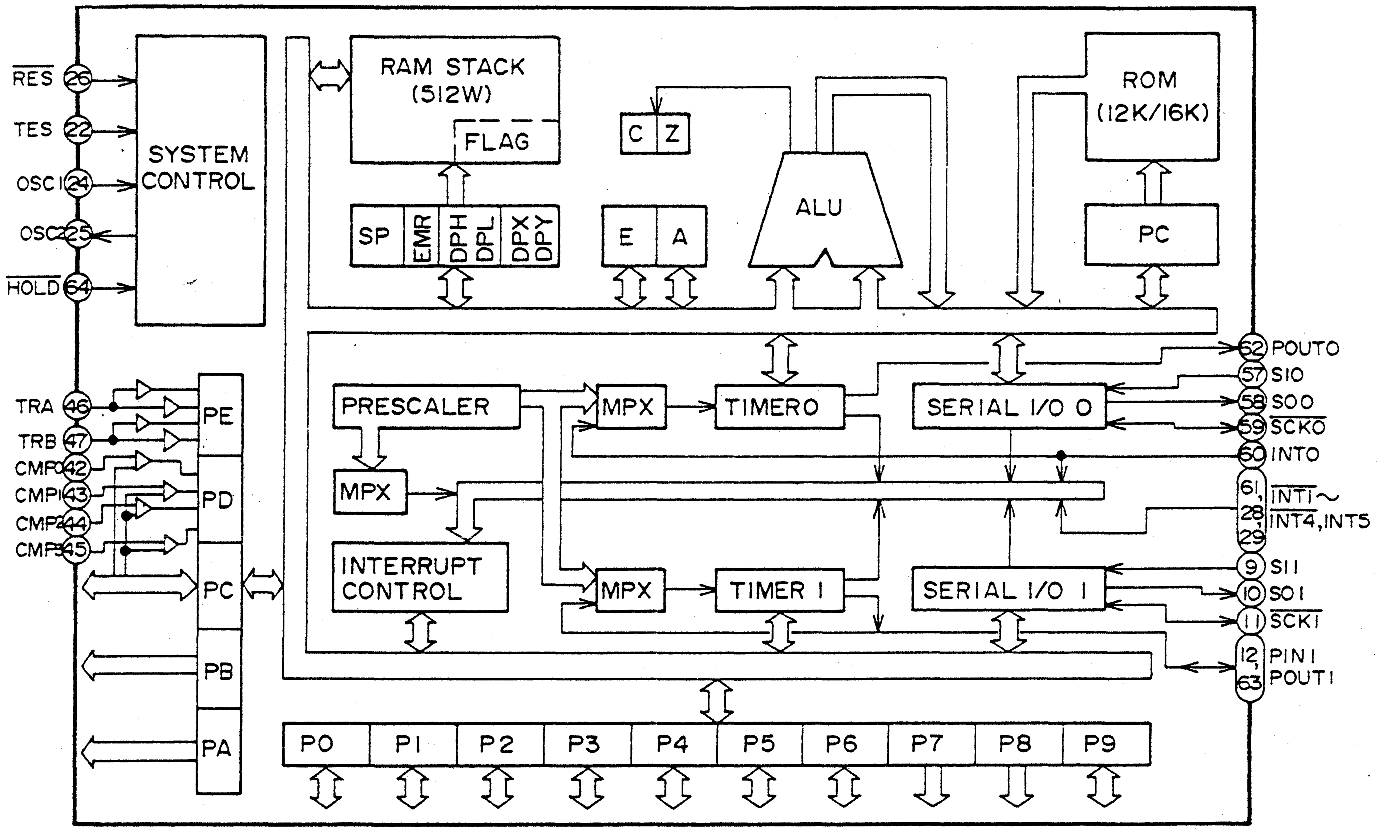
IC601 - LC78620E

Terminal Number	Terminal Code	I/O	Function Explanation	
1	DEFI	I	Defect detection signal (DEF) input terminal. (When unused, "L".)	
2	TAI	I	For PLL	Input terminal for testing. Pulldown resistance is self-contained.
3	PDO	O		Phase comparison output terminal for outer VCO control.
4	VVss			Power supply terminal for self-contained VCO. Normally 0V.
5	ISET	AI		Resistance connecting terminal for PDO output current adjustment.
6	VV$_{DD}$			Earthing terminal for self-contained VCO. Normally 5V.
7	FR	AI		For VCO range frequency adjustment.
8	Vss		Earthing terminal for digital system. Normally 0V.	
9	EFMO	O	For slice level control	EFM signal reverse output terminal.
10	$\overline{\text{EFMO}}$	O		EFM signal output terminal.
11	EFMIN	I		EFM signal input terminal.
12	TEST2	I	Input terminal for testing. Pulldown resistance is self-contained.	
13	CLV+	O	Output terminal for spindle servo control. Accelelates when CLV+ is "H", slows down when CLV- "H".	
14	CLV-	O		
15	V/P	O	Output terminal for automatic switchover monitor by rough servo / phase control. "H" causes rough servo, "L" phase control mode.	
16	FOCS	O	Output terminal for focus servo on/off. "L" causes focus servo ON.	
17	FST	O	Output terminal for focus start pulse. Open drain output.	
18	$\overline{\text{FZD}}$	I	Input terminal for focus error zero cross signal. (When unused, "L".)	
19	HFL	I	Input terminal for track detecting signal. Schmidt input.	
20	TES	I	Input terminal for tracking error signal. Schmidt input.	
21	PCK	O	Clock monitoring terminal for EFM data playback. At the time of phase lock, 4.3218MHz.	
22	FSEQ	O	Output terminal for synchronous signal detection. When synchronous signal detected from EFM signal and synchronous signal occurring inside correspond, "H".	
23	TOFF	O	Output terminal for tracking OFF.	
24	TGL	O	Output terminal for tracking gain switchover. "L" raises gain.	
25	THLD	O	Output terminal for tracking hold.	
26	TESTS	O	Output terminal for testing. Pulldown resistance is self-contained.	
27	V$_{DD}$		Power supply terminal for digital system. Normally 5V.	
28	JP+	O	Output terminal for track jump. When JP+ is "H", accelerates at the time of outer track direction jump, or slows down at the time of inner track direction jump. When JP- is "H", accelerates at the time of inner track direction jump, or slows down at the time of outer track direction. 3 value output is possible by command.	
29	JP–	O		
30	DEMO	I	Input terminal for sound turn-on function at the time of set adjustment process. Pulldown resistance is self-containd.	
31	TEST4	I	Input terminal for testing. Pulldown resistance is self-containd.	
32	EMPH	O	Output terminal for deemphasis monitor. At the time of "H", deemphasis disc is in play-back.	
33	LRCKO	O	Digital filter output.	Word clock output.
34	DFORO	O		RCH data output.
35	DFOLO	O		LCH data output.
36	DACKO	O		Bit clock output.
37	TESTIO	O	Output terminal for testing. Open (Normally "L" output).	
38	USDACK	I	Anti-shock correspondence input. (Unused, "L".)	Bit clock input.
39	USDFIN	I		LRch data.

PCS 82 450

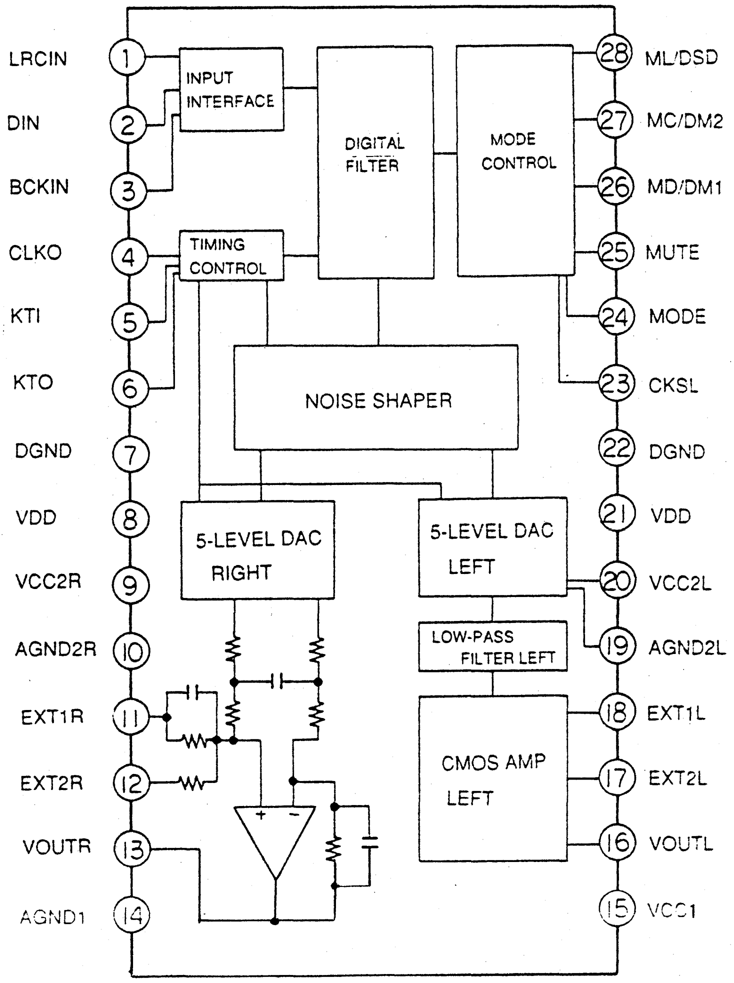
IC CIRCUIT BLOCK DIAGRAM

IC801 - LC66566B



RES 26
TES 22
OSC1 24
OSC2 25
HOLD 64
SYSTEM CONTROL
TRA 46
TRB 47
CMP0 42
CMP1 43
CMP2 44
CMP3 45
PE
PD
PC
PB
PA
RAM STACK (512W)
FLAG
SP
EMR
DPH
DPL
DPX
DPY
C
Z
E
A
ALU
ROM (12K/16K)
PC
PRESCALER
MPX
MPX
TIMER0
SERIAL I/O 0
MPX
INTERRUPT CONTROL
MPX
TIMER 1
SERIAL I/O 1
62 POUT0
57 SI0
58 SO0
59 SCK0
60 INT0
61, 28, 29 INT1~ INT4, INT5
9 SI1
10 SO1
11 SCK1
12, 63 PIN1 POUT1
P0
P1
P2
P3
P4
P5
P6
P7
P8
P9

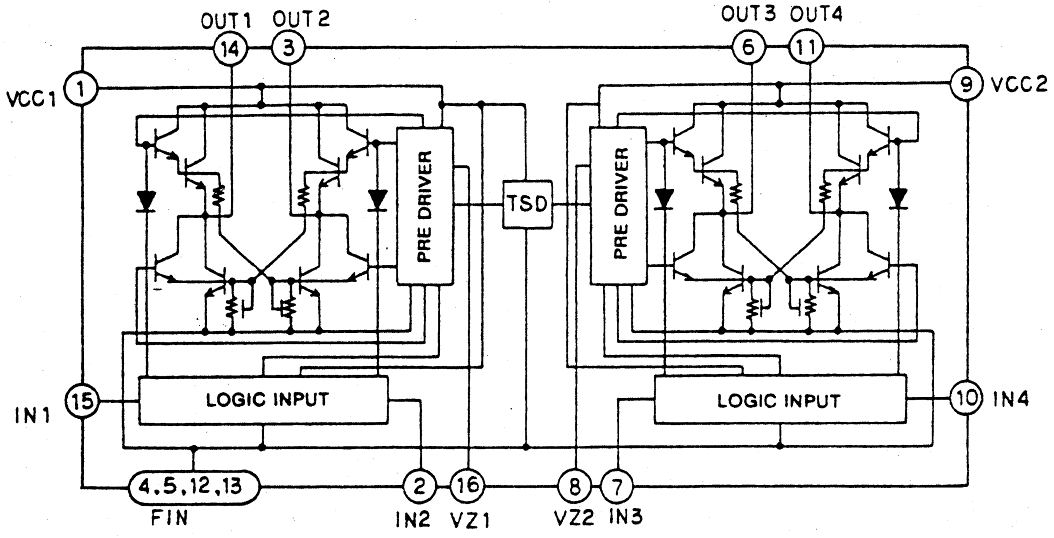
IC701 - PCM1710U



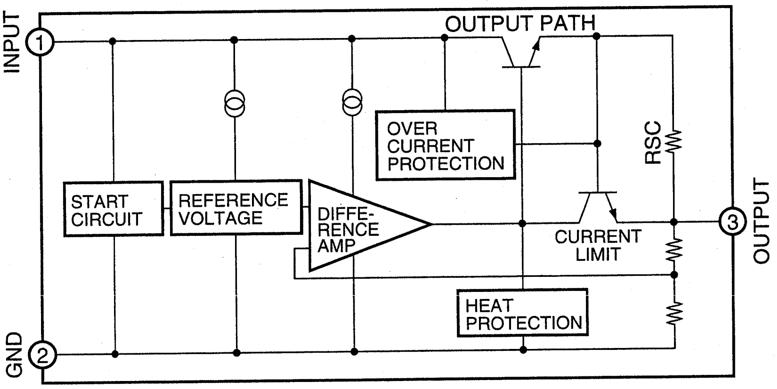
LRCIN 1
DIN 2
BCKIN 3
CLKO 4
KTI 5
KTO 6
DGND 7
VDD 8
VCC2R 9
AGND2R 10
EXT1R 11
EXT2R 12
VOUTR 13
AGND1 14
INPUT INTERFACE
TIMING CONTROL
DIGITAL FILTER
MODE CONTROL
NOISE SHAPER
5-LEVEL DAC RIGHT
5-LEVEL DAC LEFT
LOW-PASS FILTER LEFT
CMOS AMP LEFT
+
−
28 ML/DSD
27 MC/DM2
26 MD/DM1
25 MUTE
24 MODE
23 CKSL
22 DGND
21 VDD
20 VCC2L
19 AGND2L
18 EXT1L
17 EXT2L
16 VOUTL
15 VCC1

IC CIRCUIT BLOCK DIAGRAM

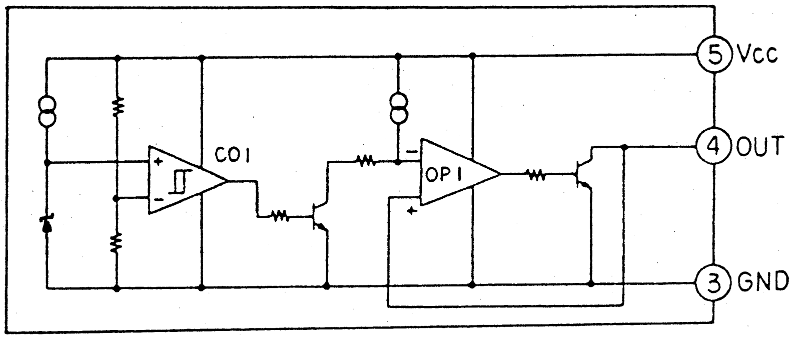
IC850 - LB1644


OUT1
OUT2
OUT3
OUT4
14
3
6
11
VCC1
1
9
VCC2
PRE DRIVER
TSD
PRE DRIVER
IN1
15
LOGIC INPUT
LOGIC INPUT
10
IN4
4,5,12,13
FIN
2
16
8
7
IN2
VZ1
VZ2
IN3

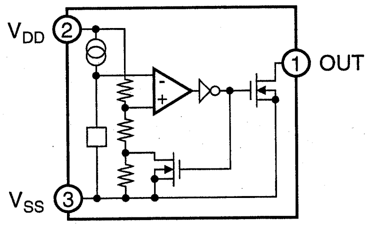
IC501 - MCM7805 / IC551 - L78M05T


INPUT
1
OUTPUT PATH
OVER CURRENT PROTECTION
RSC
START CIRCUIT
REFERENCE VOLTAGE
DIFFE-RENCE AMP
CURRENT LIMIT
3
OUTPUT
HEAT PROTECTION
GND
2

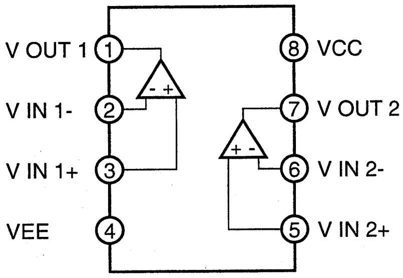
IC803 - PST9138N


5
Vcc
CO1
OP1
4
OUT
3
GND

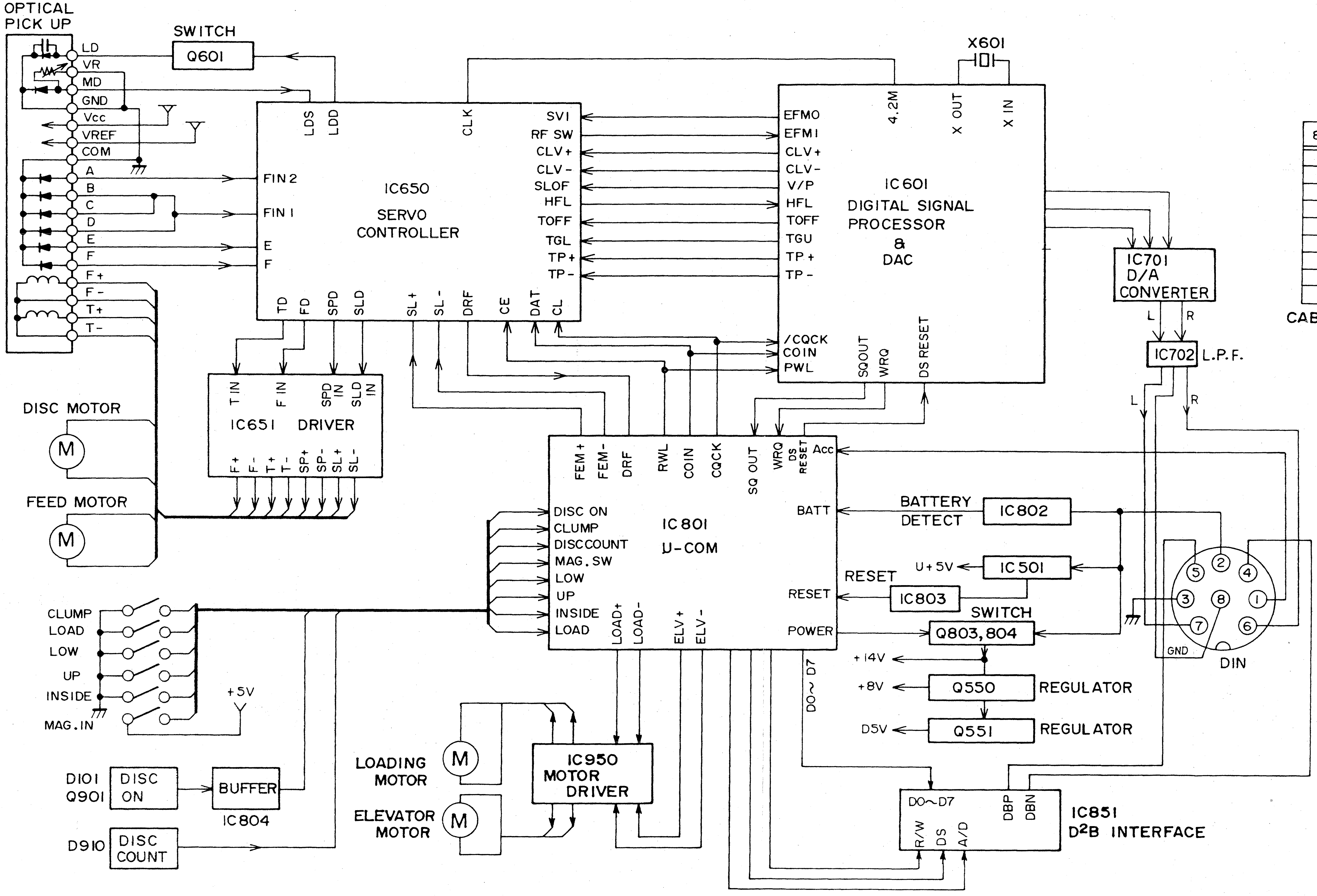
IC802 - S-8054HN


VDD
2
1
OUT
VSS
3

IC702 - NJM2100M


V OUT 1
1
V IN 1-
2
V IN 1+
3
VEE
4
8
VCC
7
V OUT 2
6
V IN 2-
5
V IN 2+

BLOCK DIAGRAM

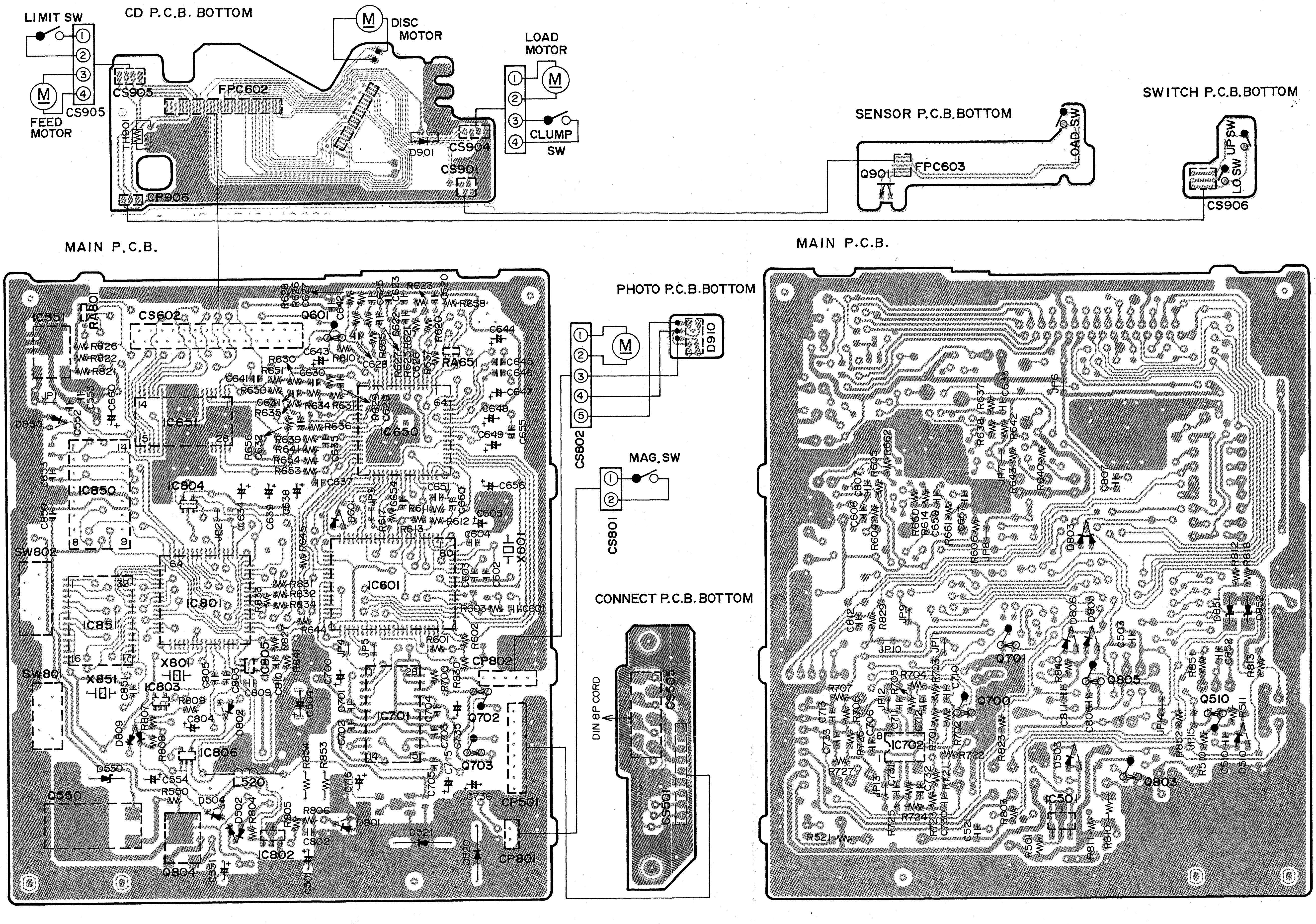

OPTICAL PICK UP
LD
VR
MD
GND
Vcc
VREF
COM
A
B
C
D
E
F
F+
F-
T+
T-
SWITCH
Q601
IC650
SERVO CONTROLLER
LDS
LDD
CLK
SVI
RF SW
CLV+
CLV-
SLOF
HFL
TOFF
TGL
TP+
TP-
FIN 2
FIN 1
E
F
TD
FD
SPD
SLD
SL+
SL-
DRF
CE
DAT
CL
X601
IC601
DIGITAL SIGNAL PROCESSOR & DAC
EFMO
EFMI
CLV+
CLV-
V/P
HFL
TOFF
TGU
TP+
TP-
4.2M
X OUT
X IN
/CQCK
COIN
PWL
SQOUT
WRQ
DS RESET
IC701
D/A CONVERTER
L
R
IC702
L.P.F.
L
R
DISC MOTOR
M
FEED MOTOR
M
IC651 DRIVER
T IN
F IN
SPD IN
SLD IN
F+
F-
T+
T-
SP+
SP-
SL+
SL-
IC801
µ-COM
FEM+
FEM-
DRF
RWL
COIN
CQCK
SQ OUT
WRQ
DS RESET
Acc
DISC ON
CLUMP
DISCCOUNT
MAG.SW
LOW
UP
INSIDE
LOAD
LOAD+
LOAD-
ELV+
ELV-
BATT
RESET
POWER
BATTERY DETECT
IC802
U+5V
IC501
RESET
IC803
SWITCH
Q803,804
+14V
+8V
Q550
REGULATOR
D5V
Q551
REGULATOR
D0~D7
CLUMP
LOAD
LOW
UP
INSIDE
MAG.IN
+5V
D101
Q901
DISC ON
BUFFER
IC804
D910
DISC COUNT
LOADING MOTOR
M
ELEVATOR MOTOR
M
IC950
MOTOR DRIVER
D0~D7
R/W
DS
A/D
DBP
DBN
IC851
D²B INTERFACE
5
2
4
3
8
1
7
6
GND
DIN

Note: DIN connections shown here from the REAR side of the connector.

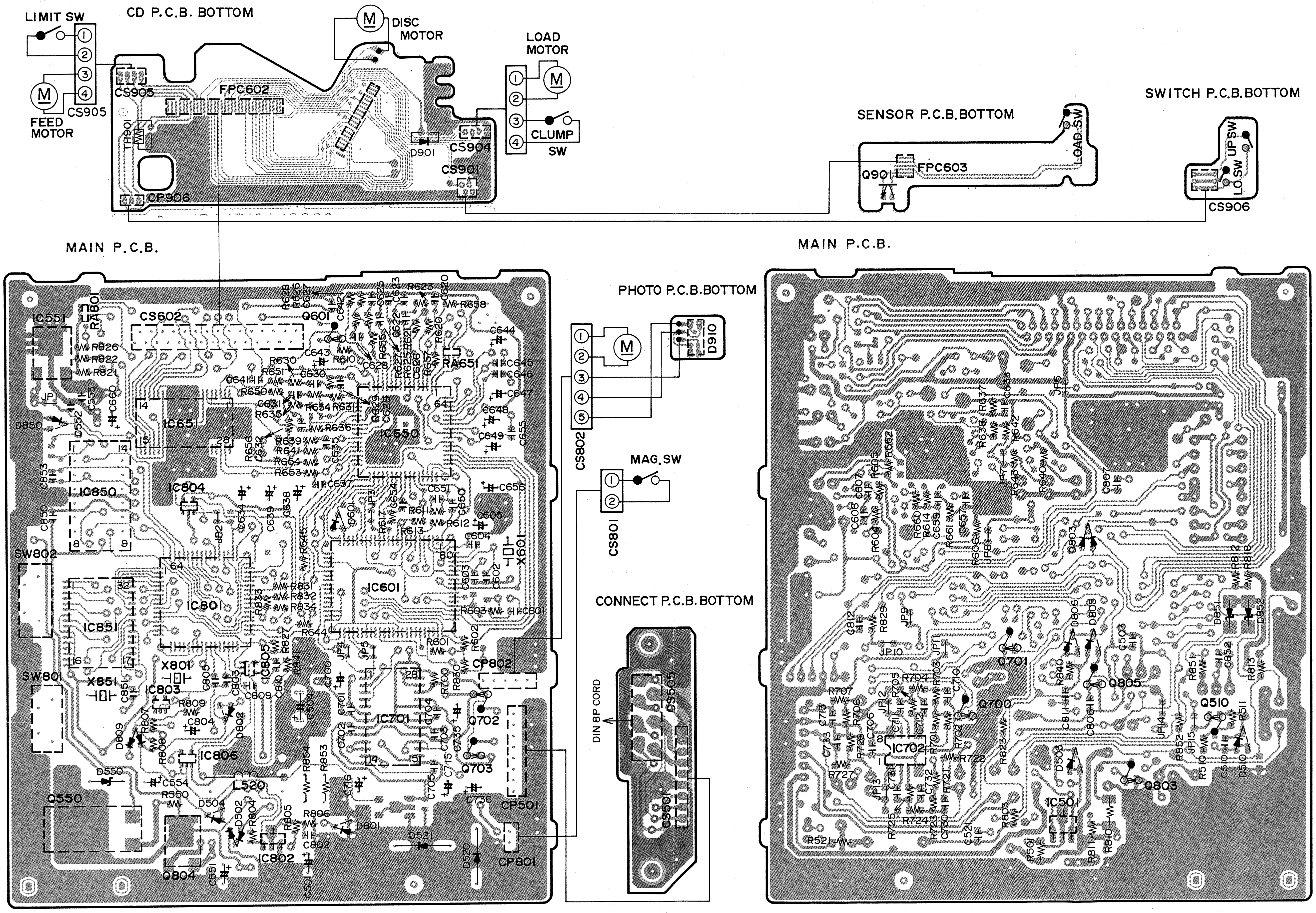
8PIN DIN	13PIN DIN
1	7
2	8
3	5
4	12
5	11
6	4
7	2
8	1,3
SHIELD	9,SHIELD

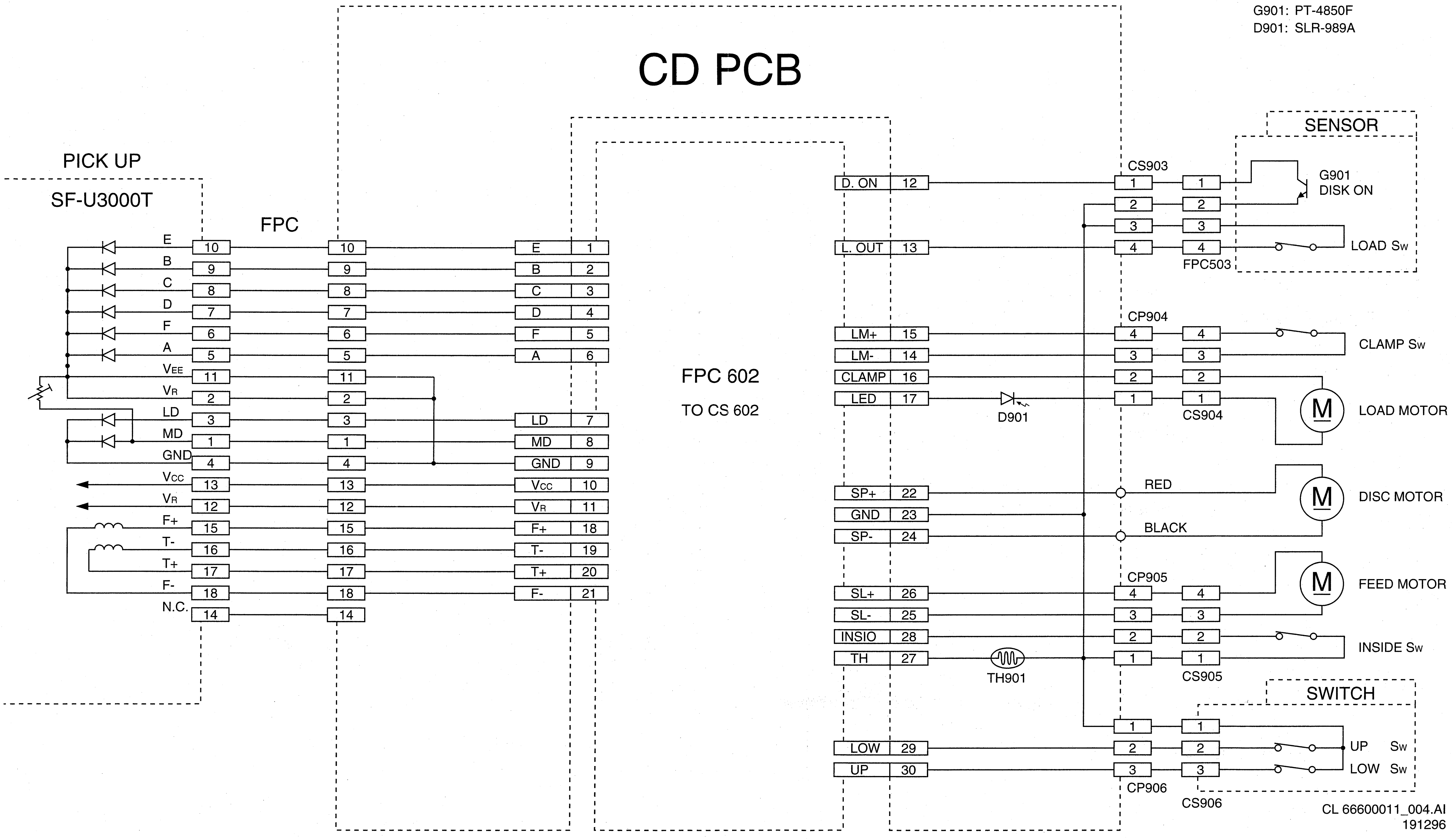
CABLE CONNECTION

PCB LAYOUT / CONNECTIONS


LIMIT SW
CD P.C.B. BOTTOM
DISC MOTOR
LOAD MOTOR
FEED MOTOR
CS905
FPC602
TH901
CP906
D901
CS904
CS901
CLUMP SW
SENSOR P.C.B.BOTTOM
Q901
FPC603
LOAD SW
SWITCH P.C.B.BOTTOM
UP SW
LO SW
CS906
MAIN P.C.B.
PHOTO P.C.B.BOTTOM
D910
CS802
MAG.SW
CS801
CONNECT P.C.B. BOTTOM
DIN 8P CORD
CS505
CS501
IC551
RA801
CS602
Q601
RA651
IC651
IC650
IC850
IC804
D850
D601
X601
SW802
IC601
IC801
IC851
SW801
X801
X851
IC803
IC805
CP802
IC701
Q702
Q703
D809
D802
IC806
L520
D550
Q550
D504
D502
IC802
D801
D521
D520
CP501
CP801
Q804
C501
C551
D803
D806
D805
Q701
Q700
Q805
Q510
IC702
D503
Q803
IC501
D851
D852
D510
JP10
R521
R501
R811
R810

PCB LAYOUT / CONNECTIONS

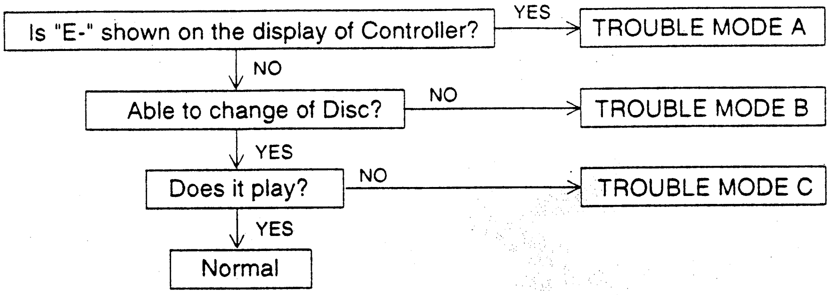

LIMIT SW
CD P.C.B. BOTTOM
DISC MOTOR
LOAD MOTOR
FEED MOTOR
CS905
FPC602
TH901
D901
CS904
CS901
CP906
CLUMP SW
SENSOR P.C.B. BOTTOM
Q901
FPC603
LOAD SW
SWITCH P.C.B. BOTTOM
UP SW
LO SW
CS906
MAIN P.C.B.
MAIN P.C.B.
PHOTO P.C.B. BOTTOM
D910
CS802
MAG. SW
CS801
CONNECT P.C.B. BOTTOM
DIN 8P CORD
CS505
CS501
IC551
RA801
CS602
Q601
IC651
IC650
RA651
IC850
IC804
IC801
IC851
IC601
X601
SW802
SW801
X801
X851
IC803
IC806
IC701
Q702
Q703
CP802
CP501
CP801
Q550
Q804
IC802
L520
D850
D550
D521
D520
IC702
IC501
Q701
Q700
Q805
Q510
Q803
D851
D852
D803
D806
D805
D503
D510


G901: PT-4850F
D901: SLR-989A
CD PCB
PICK UP
SF-U3000T
FPC
E
B
C
D
F
A
VEE
VR
LD
MD
GND
VCC
VR
F+
T-
T+
F-
N.C.
10
9
8
7
6
5
11
2
3
1
4
13
12
15
16
17
18
14
E 1
B 2
C 3
D 4
F 5
A 6
LD 7
MD 8
GND 9
VCC 10
VR 11
F+ 18
T- 19
T+ 20
F- 21
FPC 602
TO CS 602
D. ON 12
L. OUT 13
LM+ 15
LM- 14
CLAMP 16
LED 17
SP+ 22
GND 23
SP- 24
SL+ 26
SL- 25
INSIO 28
TH 27
LOW 29
UP 30
CS903
FPC503
CP904
CS904
D901
RED
BLACK
CP905
CS905
TH901
CP906
CS906
SENSOR
G901
DISK ON
LOAD Sw
CLAMP Sw
M
LOAD MOTOR
M
DISC MOTOR
M
FEED MOTOR
INSIDE Sw
SWITCH
UP Sw
LOW Sw
CL 66600011_004.AI
191296

PCS 82 460

TROUBLE SHOOTING

TROUBLE CHECKING FLOW CHART



1. TROUBLE MODE A

"E" displayed by mechanical trouble of changer Mechanism. (At first, check voltage of car battery.)

E-07...... TOC Reading Defective
- Disc is reversed
- Disc is stained
- Chucking is imperfect
- Inner Circlelimit SW defective
- Feed Motor Mechanism defective
- P.U FPC Short has not removed

E-30......Temperature Trouble Message
- The temperature inside the changer goes above its reference temperature.

2. TROUBLE MODE B

(Disc change is not completed within 30 seconds.)
- Mechanism defective
- Magazine defective
- LOAD SW, UP SW, LOW SW, CLAMP SW, MAG SW defective.
- Q901, D901, D910 defective

3. TROUBLE MODE C

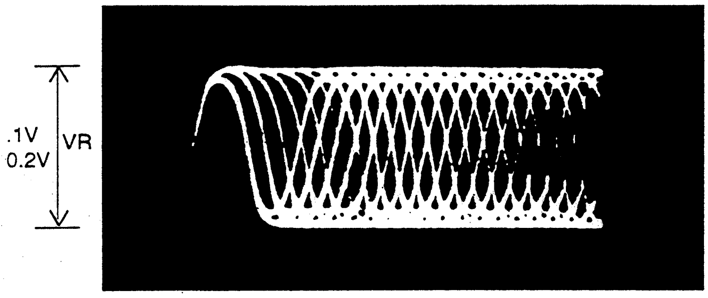
SYMPTOM	DEFECTIVE CIRCUIT	DEFECTIVE POINT
Disc Turning	Inferiority Feed Motor Circuit	· Check inner circlelimit SW and CS602 28pin
		· Check voltage of IC801
		· Check voltage of IC651 17, 18pin
		· Check Feed Motor and Mechanism
	Focus Search Circuit	· Check voltage of IC650 16pin
		· Check voltage of IC651 11, 12pin
		· Check CS602 18, 21pin
		· Check pickup
	APC	· Check Q601 short or open
		· Check IC601 62,63pin
		· Check pickup
	Disc Motor Circuit	· Check IC601 13pin and IC650 27pin
		· Check IC651 15, 16pin
		· Check Disc Motor and Mechanism
	Power Supply Circuit	· Check IC801 11,13pin
		· Check Q803, Q804
		· Check Q550 and IC551
Track Search	Tracking Servo Circuit	· Check voltage of TP. TE and adjustment Inferiority of SVR651
		· Check IC650 15pin and IC651 13,14pin
		· Check IC651 3, 4pin
		· Check pickup
	Kick Pulse Circuit	· Check IC601 28, 29pin and IC650 14pin
	Feed Motor Circuit	· Check IC650 29pin
		· Check Feed Motor and Mechanism
Noise	RF Circuit	· Check waveform of TP RF
	Mechanism	· Check eccentricity of Mechanism and Disc rub
	Audio Circuit	· Check IC701,702
		· Check Q700~703
		· Check CP501 6, 7, 8pin

TROUBLE SHOOTING

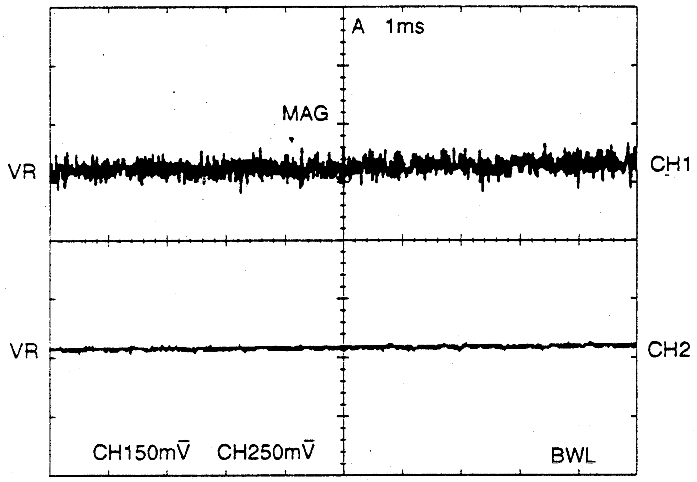
WAVE FORM

Note: Reference voltage VR → TP, VR (2.50)

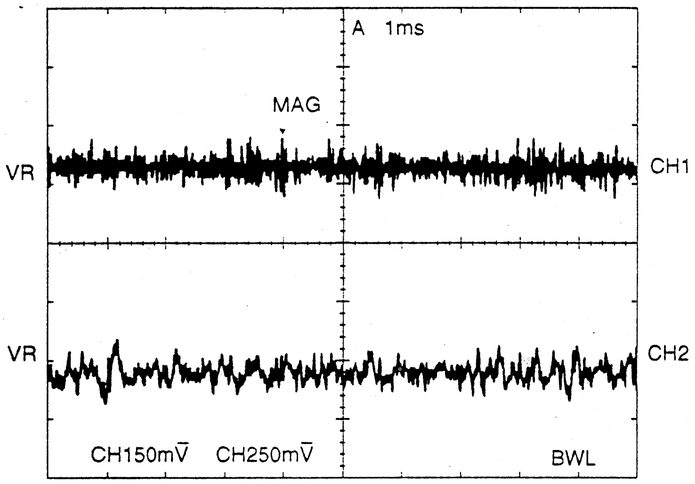
MODE PLAY
RF (TP, RF) 0.5μs



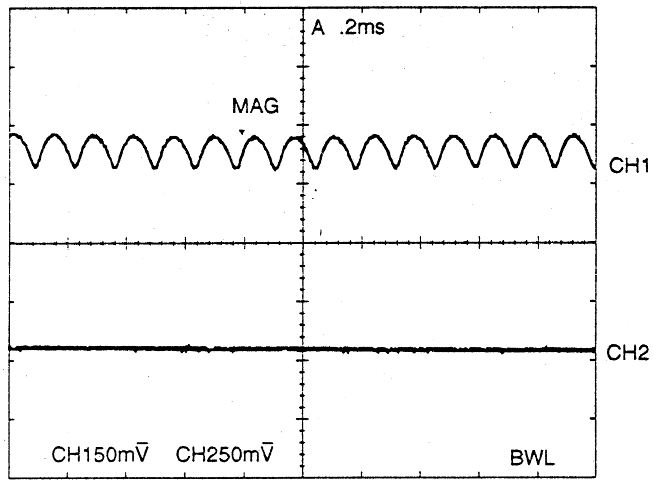
MODE PLAY
CH1 TE (TP,TE)
CH2 FE (TP,FE)



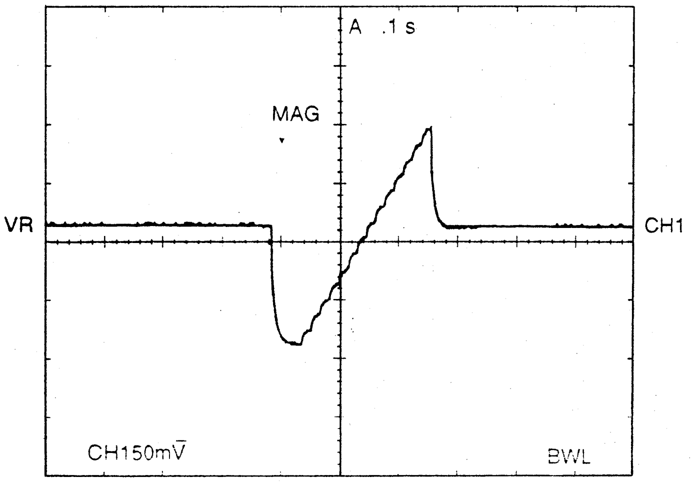
MODE PLAY
CH1 TO (IC650 15PIN)
CH2 FD (IC650 16PIN)



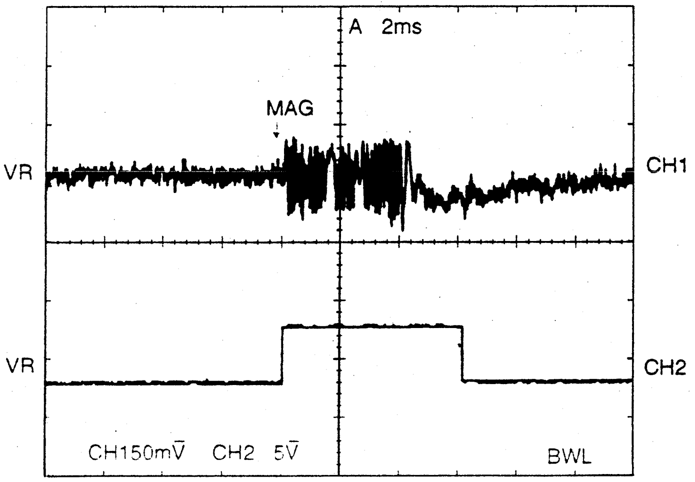
MODE PLAY
CH1 SPD (IC650 27PIN)
CH2 SLEQ (IC650 28PIN)



MODE FOCUS SEARCH
CH1 FD (IC650 16PIN)

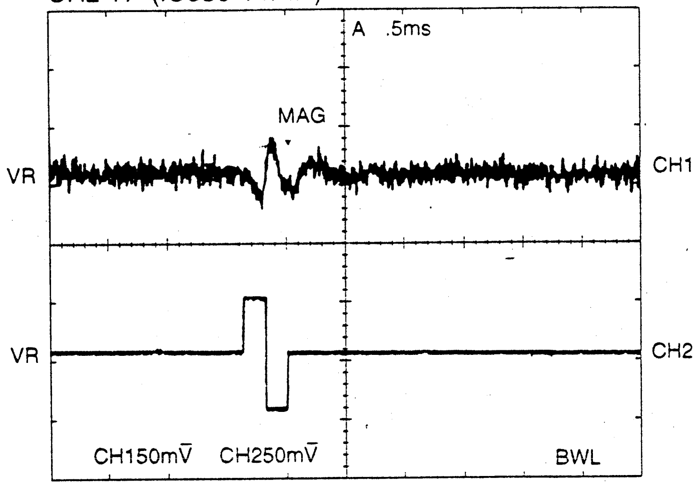


MODE Forward Search (64 Track jump)
CH1 TE (TP, TE)
CH2 FEM+ (IC801 1PIN)

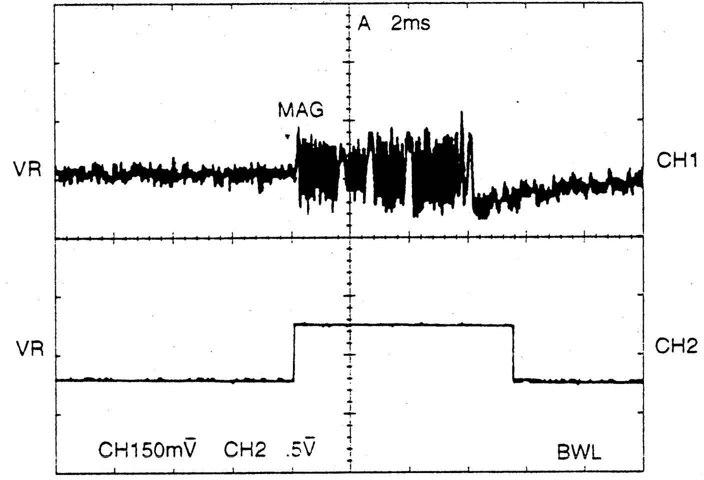


TROUBLE SHOOTING

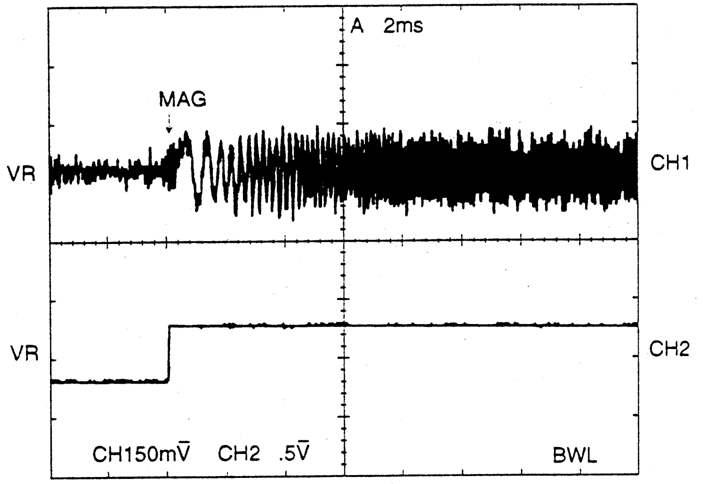
MODE PAUSE
CH1 TE (TP, TE)
CH2 TP (IC650 14PIN)



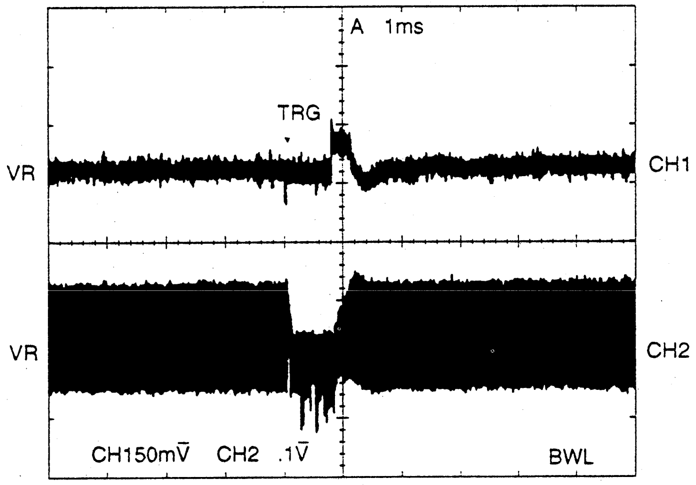
MODE Forward Search (128 Track jump)
CH1 TE (TP, TE)
CH2 FEM+ (IC801 1PIN)



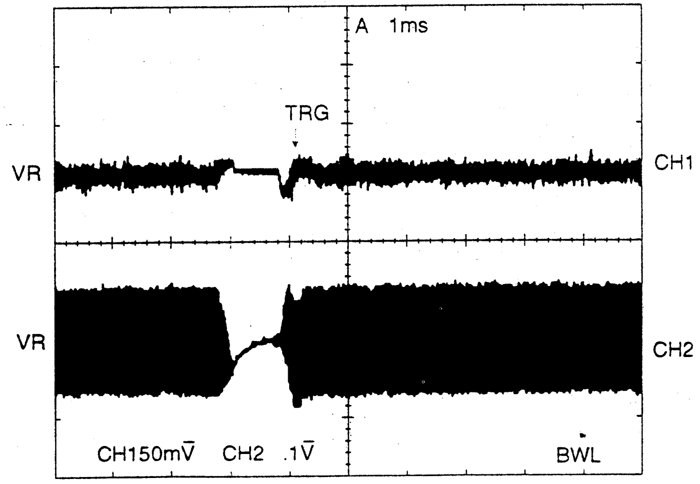
MODE Forward Search (Track count)
CH1 TE (TP, TE)
CH2 FEM+ (IC801 1PIN)



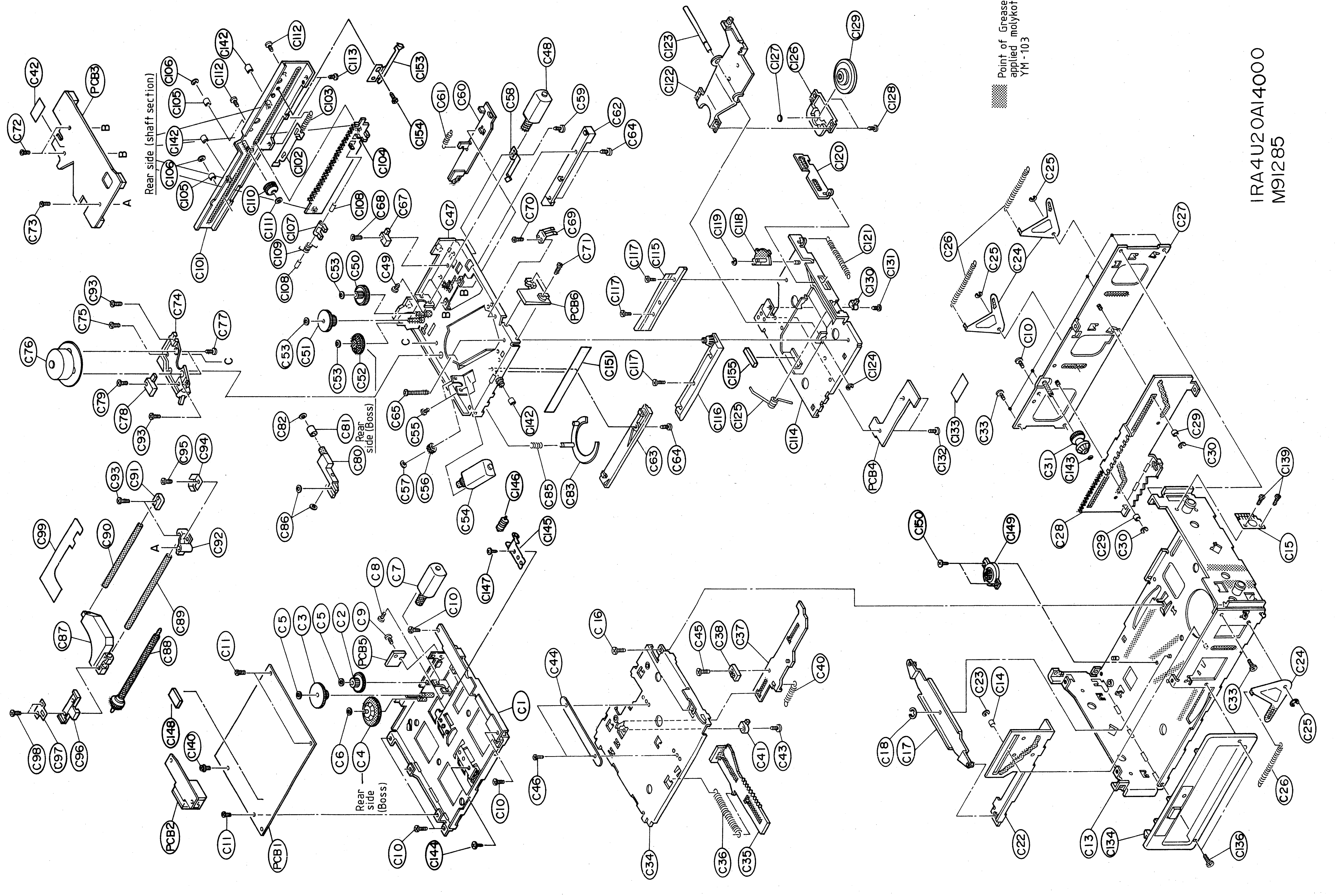
MODE PLAY (The interruption part passes 1mm)
CH1 TE (TP, TE)
CH2 RF (TP, RF)



MODE PLAY (The black dots part passes 1mm)
CH1 TE (TP, TE)
CH2 RF (TP, RF)



ᴇXPLODED VIEW CD CHANGER MECHANISM / LUBRICATION OVERVIEW


C42
PCB3
C72
B
B
A
C73
Rear side (shaft section)
C106
C105
C142
C106
C105
C112
C142
C112
C113
C153
C154
C103
C102
C104
C110
C111
C107
C109
C108
C108
C101
C68
C67
C47
C61
C60
C58
C48
C59
C62
C64
C70
C69
C71
PCB6
C53
C50
C49
B
B
C53
C51
C53
C52
C
C
C76
C75
C93
C74
C77
C79
C78
C93
C82
C81
Rear side (Boss)
C80
C86
C65
C55
C57
C56
C54
C146
C85
C83
C142
C151
C117
C116
C125
C155
C63
C64
C117
C115
C117
C119
C118
C114
C124
C121
C130
C131
C120
C122
C123
C127
C126
C129
C128
PCB4
C132
C133
C33
C31
C143
C10
C26
C25
C24
C25
C27
C29
C30
C28
C29
C30
C139
C15
C150
C149
C95
C94
C91
C93
C99
C90
C92
A
C89
C87
C88
C98
C97
C96
C8
C7
C10
C5
C3
C5
C2
C9
PCB5
C11
C148
C140
PCB2
C11
PCB1
C6
C4
Rear side (Boss)
C10
C144
C10
C1
C147
C145
C 16
C45
C38
C37
C40
C44
C46
C41
C43
C34
C36
C35
C23
C14
C18
C17
C22
C13
C134
C136
C26
C25
C24
C33

▨ Point of Grease applied molykote YM-103

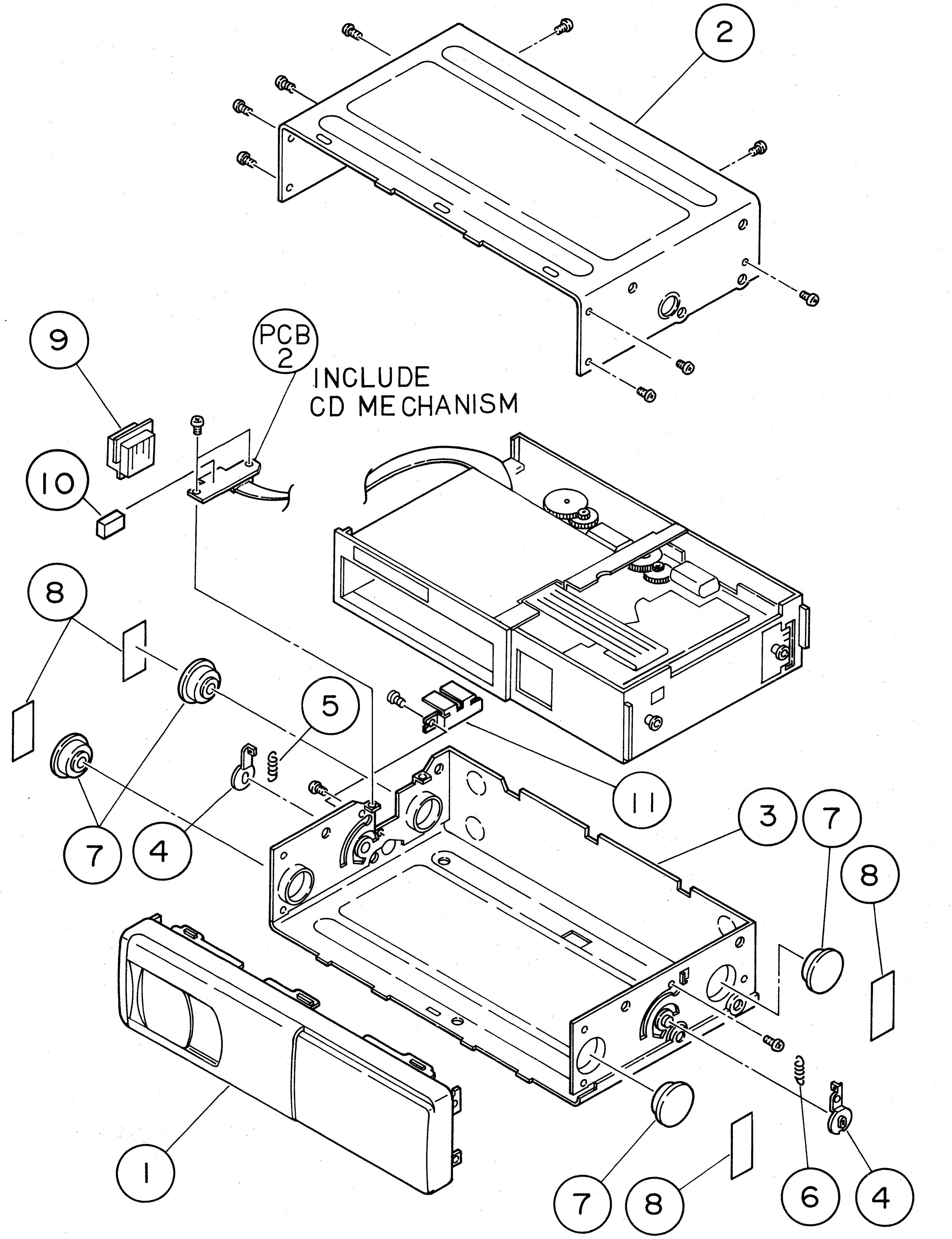
IRA4U20AI4000
M91285

MECHANICAL PARTS RC026

C2	4822 522 33508	Gear, A
C3	4822 522 33509	Gear, B
C4	4822 522 33511	Gear, C
C5	4822 532 12294	Special washer
C6	4822 532 12295	Special washer
C7	4822 361 30441	Assy DC motor
C23	4822 532 12293	Special washer
C30	4822 532 12293	Special washer
C31	4822 522 33512	Gear, D
C41	4822 276 13547	Switch, push
C48	4822 361 30441	Assy DC motor
C50	4822 522 10595	Gear, LA
C51	4822 522 10596	Gear, LB
C52	4822 522 33514	Gear, G
C53	4822 532 12294	Special washer
C54	4822 361 10935	Assy CD feed motor
C56	4822 522 10597	Gear, FB
C57	4822 532 12735	Special washer
C67	4822 276 13547	Switch, push
C76	4822 361 10936	Assy DC motor
C78	4822 276 13547	Switch, push
C82	4822 532 12294	Special washer
C86	4822 532 12295	Special washer
C87	4822 691 10567	Pickup unit
C91	4822 535 10449	Shaft
C92	4822 502 14399	Screw
C96	4822 463 11123	Thrust, screw
C102	4822 402 61548	Lever, switch
C104	4822 402 61549	Assy lever/slide
C106	4822 532 12293	Special washer
C110	4822 522 33515	Gear, H
C111	4822 532 12294	Special washer
C129	4822 528 11071	Flange
C130	4822 276 13547	Switch, push
C134	4822 459 04421	Panel assy
C143	4822 532 12295	Special washer
C145	4822 402 10626	Arm, roller
C146	4822 528 11069	Roller
	4822 321 62668	Cable, 2p - 160mm
	4822 320 11737	Cable, 4p - 40mm
	4822 320 11738	Cable, 5p - 90mm

Note: *all parts not mentioned here are no service parts!*

EXPLODED VIEW CABINET PARTS


2
9
PCB 2
INCLUDE
CD MECHANISM
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4

IRA4U29A33000
RC026

PCS 82 466

CABINET PARTS AND ACCESSORIES

***Note:** all parts not mentioned here are no service parts!*

1	4822 459 04422	Front panel assy
2	4822 444 40787	Cabinet assy
3	4822 442 00686	Bottom lid assy
7	4822 529 10308	Damper
9	4822 462 10841	Cap for DIN connector
	4822 736 14834	Instructions for use
	4822 402 61551	Accessory part assy - brackets
	4822 310 10777	Accessory part assy - car fixation brackets
	4822 310 10778	Accessory part assy - brackets and bolts
	4822 321 62671	DIN extension cable 5.5m
	4822 321 62263	Rect.C - DIN interface cable
	4822 691 10569	CD magazine assy
	4822 502 21556	Transport screw

ELECTRICAL PARTS RC026

***Note:** all parts not mentioned here are no service parts!*

D502	4822 130 82557	DCC010
D503	4822 130 10782	DSB015
D504	4822 130 83633	MA704A
D510	4822 130 83765	Zener 5.6V
D520	4822 130 31533	DS135
D521	4822 130 31533	DS135
D550	4822 130 10783	Zener 8.2V
D601	4822 130 83631	DSB010
D801	4822 130 83632	Zener 5.1V
D802	4822 130 83631	DSB010
D803	4822 130 83637	DCB010
D805	4822 130 83637	DCB010
D806	4822 130 83631	DSB010
D809	4822 130 10784	DCA010
D850	4822 130 80273	Zener 8.2V
D851	4822 130 10657	Zener 5.6V
D852	4822 130 10657	Zener 5.6V
D901	4822 130 10114	LED SLR-989A-AB
D910	4822 130 91369	Photo coupler SPI-235-1
	4822 130 63655	Photo diode PT4850F

Q510	4822 130 60753	2SC2812-L6
Q550	4822 130 10786	2SD2199S-TSD-DR
Q601	4822 130 10787	2SA1338-6
Q700	4822 130 90323	DTC114TK
Q701	4822 111 90813	UN2113
Q702	4822 130 90323	DTC114TK
Q703	4822 130 90323	DTC114TK
Q803	4822 130 63551	DTC124XK
Q804	4822 130 62912	2SB1202(ST)
Q805	4822 130 10785	2SA1179-M6

IC501	4822 209 33241	MC147805AUT
IC551	4822 209 33094	L78M05T
IC601	4822 209 15225	LC78620E-D
IC650	4822 209 15227	LA9240M servo
IC651	4822 209 15228	BA6999FP
IC701	4822 209 15226	PCM1710U
IC702	4822 209 30455	NJM2100M
IC801	4822 209 15229	LC66566B-4H90
IC802	4822 209 63631	S-8054HN-CB
IC803	4822 209 15203	PST9138N
IC804	4822 209 32984	TC7SU04F
IC805	4822 209 32984	TC7SU04F
IC806	4822 209 72397	TC4S71F
IC850	4822 209 33758	LB1644
IC851	4822 209 32743	MSM6307GS

MISCELLANEOUS

CS505	4822 267 31758	DIN socket
L520	4822 157 11124	SK 5mH
SW801	4822 276 13828	Eject switch
SW802	4822 276 13548	Reset switch
TH901	4822 111 92201	Thermistor (NTH4G42B104EB)
X601	4822 242 81702	Crystal 16.9433MHz
X801	4822 242 73769	Ceramic resonator 4.190MHz
X851	4822 242 10678	Ceramic resonator 5.75MHz
	4822 276 13547	UP switch
	4822 276 13547	LOW switch

IC CIRCUIT DESCRIPTION

IC601 - LC78620E (CONT'D)

40	USDFIR	I	Anti-shock correspondence input. (unused, "L".)	Input terminal for testing. Normally "L".
41	USLRCK	I		Word clock output. (When unused, "L".)
42	LRSY	O	ROMXA correspondence input	L/R clock output.
43	CK2	O		Bit clock output. DACLK (At the time of RES) Polarity reverse (CK2CON mode)
44	ROMAX	O		Data output. Data (Supplement) (At the time of RES) ROMOUT (ROMXA mode)
45	C2F	O		C2 Frag output.
46	MUTEL	O	For 1bit DAC	Mute output terminal.
47	LVDD			Power supply terminal for L channel. Normally 5V.
48	LCHP	O		L channel P output terminal.
49	LCHN	O		L channel N output terminal.
50	LVss			Earthing terminal for L channel. Normally 0V.
51	RVss			Earthing terminal for R channel. Normally 0V.
52	RCHN	O		R channel N output terminal.
53	RCHP	O		R channel P output terminal.
54	RVDD			Earthing terminal for R channel. Normally 5V.
55	MUTER	O		Mute output terminal.
56	DOUT	O	Digital OUT output terminal.	
57	SBSY	O	Output terminal for synchronous signal of sub-code block.	
58	EFLG	O	Terminal for monitoring C1, C2, single, double correction.	
59	PW	O	Output terminal for sub-code P, Q, R, S, T, U, W.	
60	SFSY	O	Output terminal for synchronous signal of sub-code frame. When sub-code is in standby, " = L ".	
61	SBCK	I	Input terminal for sub-code readout clock. Schmidt input.	
62	FSX	O	Output terminal for 7.35KHz synchronous signal which is divided frequency from crystal oscillation.	
63	WRQ	O	Output terminal for sub-code Q output standby.	
64	RWC	I	Input terminal for read/write control.	
65	SQOUT	O	Sub-code Q output terminal.	
66	$\overline{\text{COIN}}$	I	Input terminal for command from micro computer.	
67	CQCK	I	Input terminal for command input intake clock, or sub- code offtake clock from SQOUT. Schmidt input.	
68	$\overline{\text{RES}}$	I	Chip reset input terminal. When power is supplied, changeover to "L" once.	
69	TST11	O	Input terminal for testing. Open (normally "L" output).	
70	$\overline{\text{LASER}}$	O	Output terminal for laser ON/OFF. Controls by serial data command from micro computer.	
71	16M	O	16.9344MHz output terminal. But outputs 33.8688MHz, only in case of quadruple speed playback mode.	
72	4.2M	O	4.2336MHz output terminal.	
73	CONT	O	Spare output terminal. Controls by serial data command from micro computer.	
74	TEST5	I	Input terminal for testing. Pulldown resistance is self-contained.	
75	CS	I	Chip select input terminal. Pulldown resistance is self-contained.	
76	XVss		Earthing terminal for crystal oscillation. Normally 0V.	
77	XIN	I	Connecting terminal for 16.9344MHz crystal oscillator.	
78	XOT	O	Connects 33.8688MHz crystal oscillator, in case of quadruple speed playback system.	
79	XVDD		Power supply terminal for crystal oscillation. Normally 5V.	
80	TEST1	I	Input terminal for testing. Pulldown resistance is self-contained.	

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IC CIRCUIT DESCRIPTION

IC851 - MSM6307GS

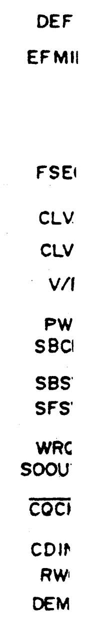
No	Port Name	I/O	Description
1	D5	I/O	8bit bi-directional address or data bus
2	D6	I/O	8bit bi-directional address or data bus
3	D7	I/O	8bit bi-directional address or data bus
4	N. C	—	
5	$R/\overline{W}$	I	Read/Write selector
6	$A/\overline{D}$	I	Selects address or data on D0~D7
7	I²C	I	Selects I²C or parallel inteface
8	$\overline{\text{DS}}$	I	Data storobe to access data bus
9	$\overline{\text{INT}}$	0	Interrupt output
10	A0	I	Programmables I²C slave addresses
11	A1	I	Programmables I²C slave addresses
12	A2	I	Programmables I²C slave addresses
13	N. C	—	
14	SBA	I/O	I²C data signal input/output
15	SCL	I/O	I²C clock signal input/output
16	GND	—	GND

No	Port Name	I/O	Description
17	VDD	—	VDD (+5V)
18	N. C	—	
19	DBN	I/O	Differential D²B lines of the intemal driver/receiver
20	DBP	I/O	Differential D²B lines of the intemal driver/receiver
21	$\overline{\text{TEST}}$	I	Test mode of IC
22	BUS OUT	0	D²B output (TTL level)
23	BUS IN	I	D²B input (TTL level)
24	6CMO	0	Clock output 6MHz resonator
25	6CMI	I	Clock input 6MHz resonatore
26	$\overline{\text{POR}}$	I	Power on reset
27	D0	I/O	8bit bi-directional address or data bus
28	N. C	—	
29	D1	I/O	8bit bi-directional address or data bus
30	D2	I/O	8bit bi-directional address or data bus
31	D3	I/O	8bit bi-directional address or data bus
32	D4	I/O	8bit bi-directional address or data bus

IC CIRC

IC851 - M

IC601 - L



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e)
ent)   (At the
MXA mode)
nnel. Normally 5V.
Normally 0V.
. Normally 0V.
. Normally 5V.
hen sub-code is in
quency from crystal
clock from SQOUT.
L" once.
nd from micro com-
case of quadruple
computer.
d playback system.

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IC CIRCUIT DESCRIPTION

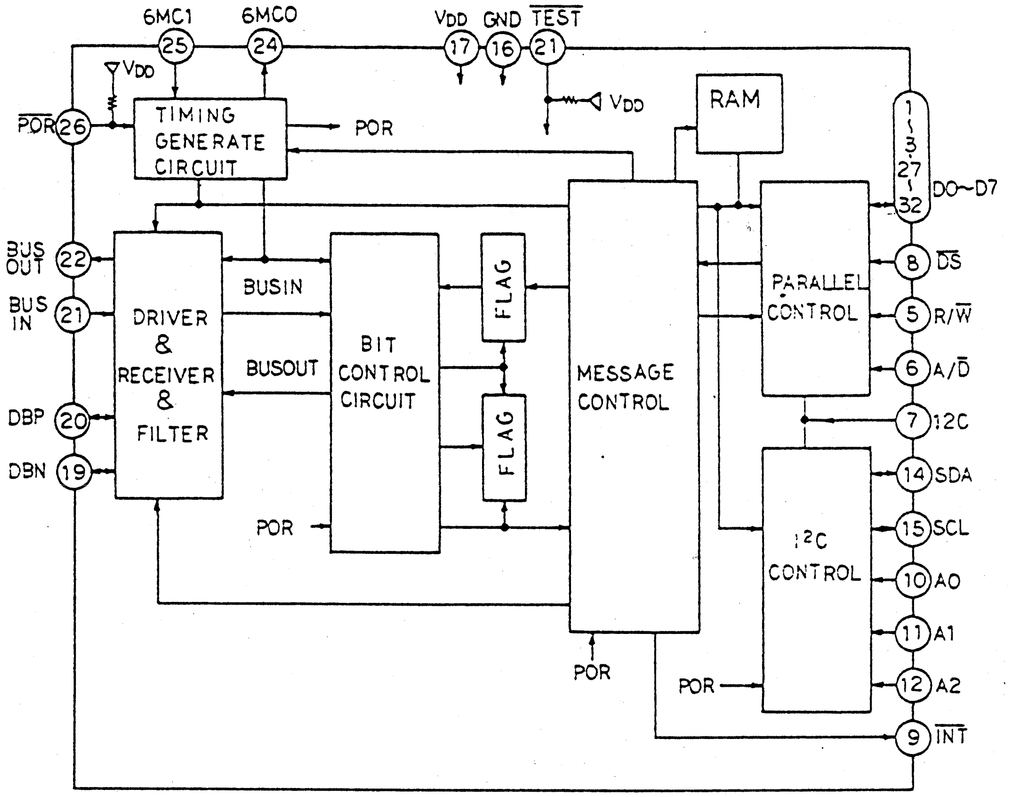
IC851 - MSM6307GS

No	Port Name	I/O	Description
1	D5	I/O	8bit bi-directional address or data bus
2	D6	I/O	8bit bi-directional address or data bus
3	D7	I/O	8bit bi-directional address or data bus
4	N.C	—	
5	R/$\overline{W}$	I	Read/Write selector
6	A/$\overline{D}$	I	Selects address or data on D0~D7
7	I²C	I	Selects I²C or parallel inteface
8	$\overline{DS}$	I	Data storobe to access data bus
9	$\overline{INT}$	0	Interrupt output
10	A0	I	Programmables I²C slave addresses
11	A1	I	Programmables I²C slave addresses
12	A2	I	Programmables I²C slave addresses
13	N.C	—	
14	SBA	I/O	I²C data signal input/output
15	SCL	I/O	I²C clock signal input/output
16	GND	—	GND

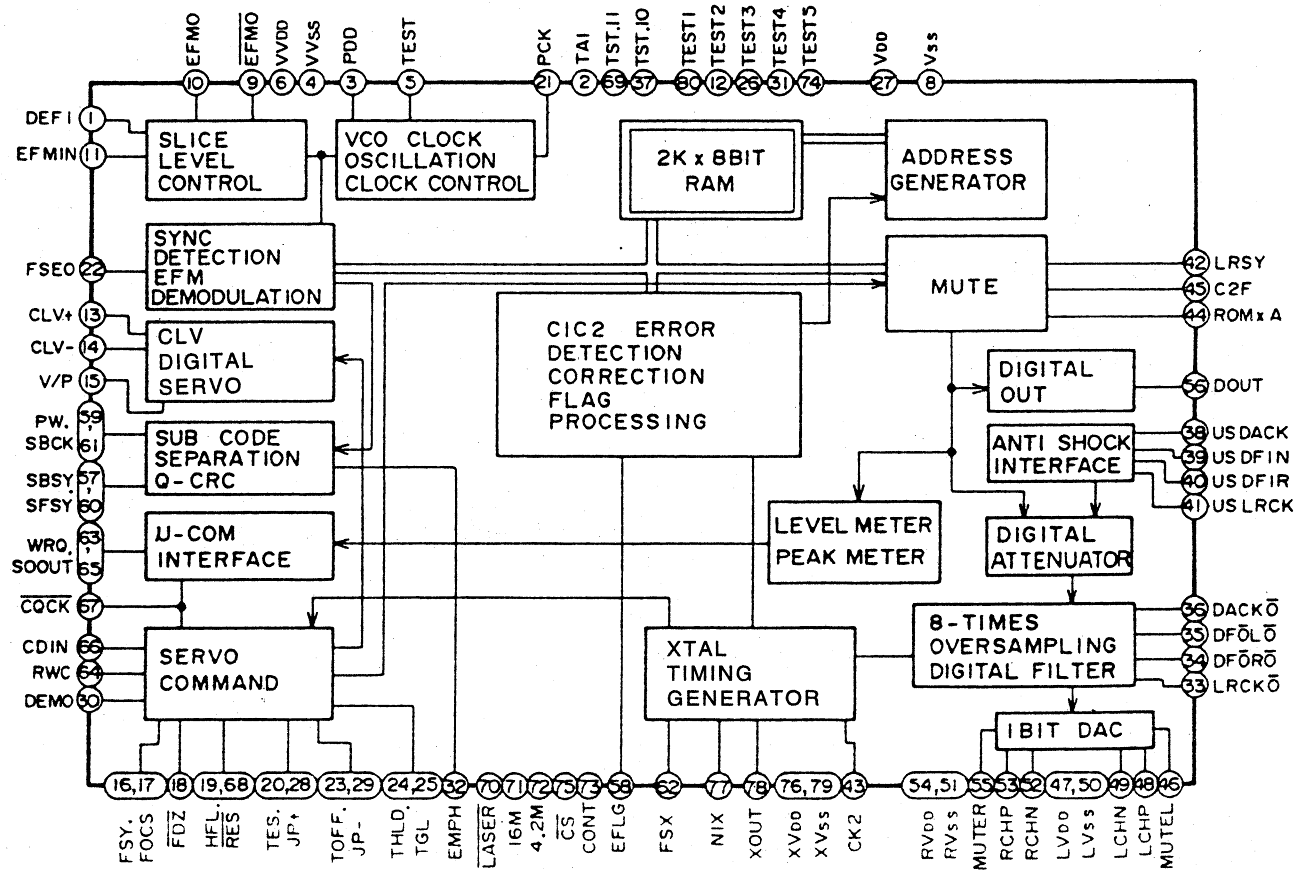
No	Port Name	I/O	Description
17	VDD	—	VDD (+5V)
18	N.C	—	
19	DBN	I/O	Differential D²B lines of the intemal driver/receiver
20	DBP	I/O	Differential D²B lines of the intemal driver/receiver
21	$\overline{TEST}$	I	Test mode of IC
22	BUS OUT	0	D²B output (TTL level)
23	BUS IN	I	D²B input (TTL level)
24	6CMO	0	Clock output 6MHz resonator
25	6CMI	I	Clock input 6MHz resonatore
26	$\overline{POR}$	I	Power on reset
27	D0	I/O	8bit bi-directional address or data bus
28	N.C	—	
29	D1	I/O	8bit bi-directional address or data bus
30	D2	I/O	8bit bi-directional address or data bus
31	D3	I/O	8bit bi-directional address or data bus
32	D4	I/O	8bit bi-directional address or data bus

IC CIRCUIT BLOCK DIAGRAM

IC851 - MSM6307GS


6MC1
6MCO
VDD
GND
TEST
25
24
17
16
21
VDD
POR
26
TIMING GENERATE CIRCUIT
POR
VDD
RAM
1~3 27~32
D0~D7
BUS OUT 22
BUS IN 21
DRIVER & RECEIVER & FILTER
BUSIN
BUSOUT
BIT CONTROL CIRCUIT
FLAG
FLAG
MESSAGE CONTROL
PARALLEL CONTROL
8 DS
5 R/W
6 A/D
7 I2C
14 SDA
15 SCL
10 A0
11 A1
12 A2
9 INT
DBP 20
DBN 19
POR
POR
POR
I2C CONTROL

IC601 - LC78620E


EFMO
EFMO
VVDD
VVSS
PDD
TEST
PCK
TAI
TST.11
TST.10
TEST1
TEST2
TEST3
TEST4
TEST5
VDD
VSS
10
9
6
4
3
5
21
2
69
37
80
12
26
31
74
27
8
DEFI 1
EFMIN 11
SLICE LEVEL CONTROL
VCO CLOCK OSCILLATION CLOCK CONTROL
2K x 8BIT RAM
ADDRESS GENERATOR
FSEO 22
SYNC DETECTION EFM DEMODULATION
MUTE
42 LRSY
45 C2F
44 ROM x A
CLV+ 13
CLV- 14
V/P 15
CLV DIGITAL SERVO
CIC2 ERROR DETECTION CORRECTION FLAG PROCESSING
DIGITAL OUT
56 DOUT
PW. 59
SBCK 61
SBSY 57
SFSY 60
SUB CODE SEPARATION Q-CRC
ANTI SHOCK INTERFACE
38 USDACK
39 USDFIN
40 USDFIR
41 USLRCK
WRQ 63
SQOUT 65
μ-COM INTERFACE
LEVEL METER PEAK METER
DIGITAL ATTENUATOR
COCK 67
CDIN 66
RWC 64
DEMO 30
SERVO COMMAND
XTAL TIMING GENERATOR
8-TIMES OVERSAMPLING DIGITAL FILTER
36 DACKO
35 DFOLO
34 DFORO
33 LRCKO
1BIT DAC
16,17
18
19,68
20,28
23,29
24,25
32
70
71
72
75
73
58
62
77
78
76,79
43
54,51
55
53
52
47,50
49
48
46
FSY. FOCS
FDZ
HFL. RES
TES. JP+
TOFF. JP-
THLD. TGL
EMPH
LASER
16M
4.2M
CS
CONT
EFLG
FSX
NIX
XOUT
XVDD
XVSS
CK2
RVDD
RVSS
MUTER
RCHP
RCHN
LVDD
LVSS
LCHN
LCHP
MUTEL

15

IC650 - LA9240MS

PIN No.	PART NAME	EXPLANATION
1	FIN2	Pickup photo-diode connecting pin. Forms RF signal by addition to FIN1 pin, and FE signal by subtraction.
2	FIN1	Pickup photo-diode connecting pin.
3	E	Pickup photo-diode connecting pin. Forms TE signal by subtraction from F pin.
4	F	Pickup photo-diode connecting pin.
5	TB	Pin for inputting DC constituent of TE signal.
6	TE-	Pin for connecting gain setting resistence of TE signal to TE pin.
7	TE	TE signal output pin.
8	TESI	TES (TRACK ERROR SENCE) comparator input pin. Band Pass TE signal, and input.
9	SCI	Input pin for shock detection.
10	TH	Constant setting pin at the time of tracking gain.
11	TA	Pin for connecting high pass elimination condensor of servo.
12	TD-	Pin for constituting tracking phase compensation constant between TD and VR pin.
13	TD	Pin for setting tracking phase compensation.
14	JP	Pin for setting tracking jump signal (kick pulse) amplitude.
15	TO	Tracking control signal output pin.
16	FD	Focusing control signal output pin.
17	FD-	Pin for constituting focussing phase compensation constant between FD and FA pin.
18	FA	Pin for constituting focussing phase compensation constant between FA- and FE- pin.
19	FA-	Pin for constituting focussing phase compensation constant between FA and FE pin.
20	FE	FE signal output pin.
21	FE-	Pin for connecting FE signal gain setting resistance to TE pin.
22	AGND	GND for analog signal.
23	SP	Single end output of CV+ and CV- pin input signal.
24	SPI	Spindle amplifier input.
25	SPG	Connecting pin for gain setting resistance at the time of spindle 12cm mode.
26	SP-	Connecting pin for Spindle phase compensation constant together with SPD pin.
27	SPD	Spindle control signal output pin.
28	SLEQ	Connecting pin for sled phase compensation constant.
29	SLD	Sled control signal output pin.
30	SL-	Input pin for sled delivery signal from micro computer.
31	SL+	Input pin for sled delivery signal from micro computer.
32	JP-	Input pin for tracking jump signal from DSP.
33	JP+	Input pin for tracking jump signal from DSP.
34	TGL	Input pin for tracking gain control signal from DSP. Gain low in case of TGL="H".
35	TOFF	Input pin for tracking off control signal from DSP. Off in case of TOFF="H".
36	TES	Output pin of TES signal to DSP.
37	HFL	(HIGH FREQENCY LEVEL) is used to judge whether main beam is located above pit or above mirror.
38	SLOF	Sled servo off control input pin.
39	CV-	Input pin for CLV error signal from DSP.
40	CV+	Input pin for CLV error signal from DSP.
41	RFSM	RF output pin.
42	RFS-	Pin for setting RF gain and EFM signal 3T compensation constant together with RFSM pin.
43	SLC	(SLICE LEVEL CONTROL) is output pin for controlling data slice level by RF waveshape DSP.
44	SLI	Input pin for controlling data slice level by DSP.
45	DGND	GND pin of digital system.
46	FSC	For Focs Smoosing capacita output pin.
47	TBC	Tracking Balance control pin.
48	NC	NO CONNECT.
49	DEF	Output pin for detecting disc defect.
50	CLK	Standard clock input pin. DSP4.23MHz is input.
51	CL	Micro computer command clock input pin.
52	DAT	Micro computer command data input pin.
53	CE	Micro computer command chip enable input pin.
54	DRF	(DEFECT RF) RF level detecting output.
55	FSS	Focs serch select pin.
56	VCC2	VCC pin for servo system and digital system.
57	REF1	Connection pin for standard voltage capacitor.
58	VR	Standard voltage output pin.
59	LF2	Pin for setting constant at the time of detecting disc defect.
60	PH1	Pin for connecting condensor for RF signal peak hold.
61	BH1	Pin for connecting condensor for RF signal bottom hold.
62	LDD	APC circuit output pin.
63	LDS	APC circuit input pin.
64	VCC1	RF system VCC pin.

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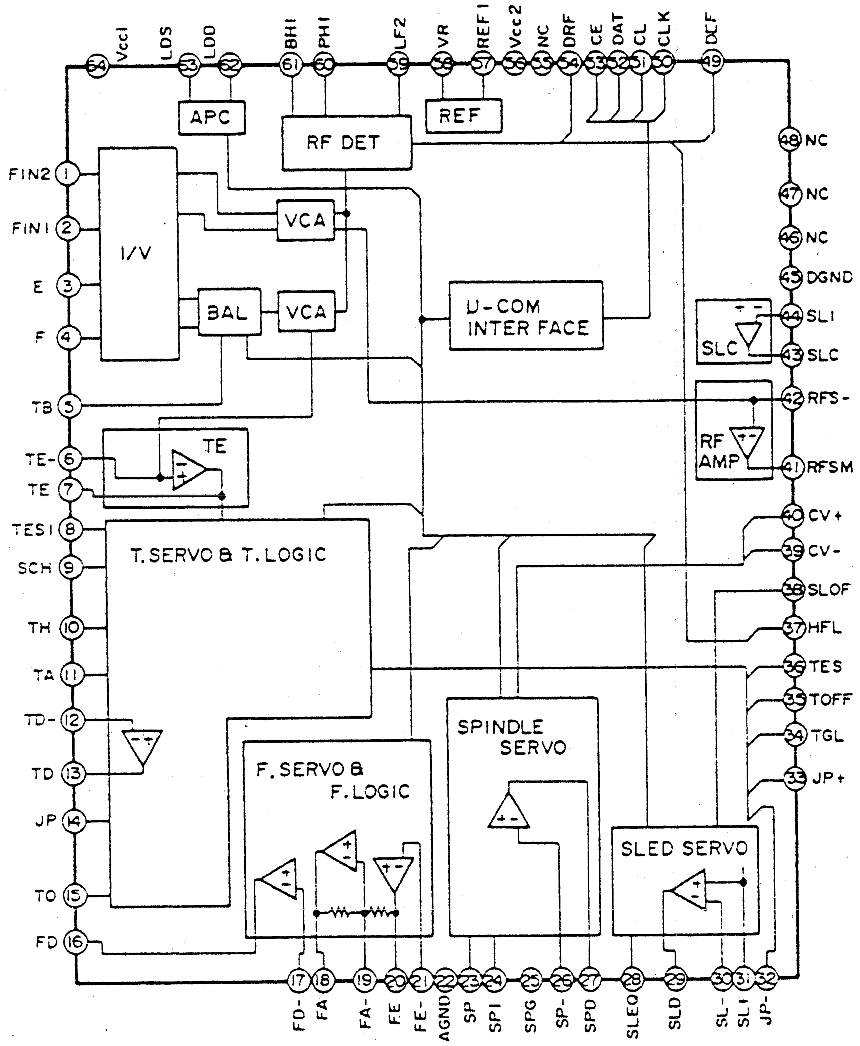
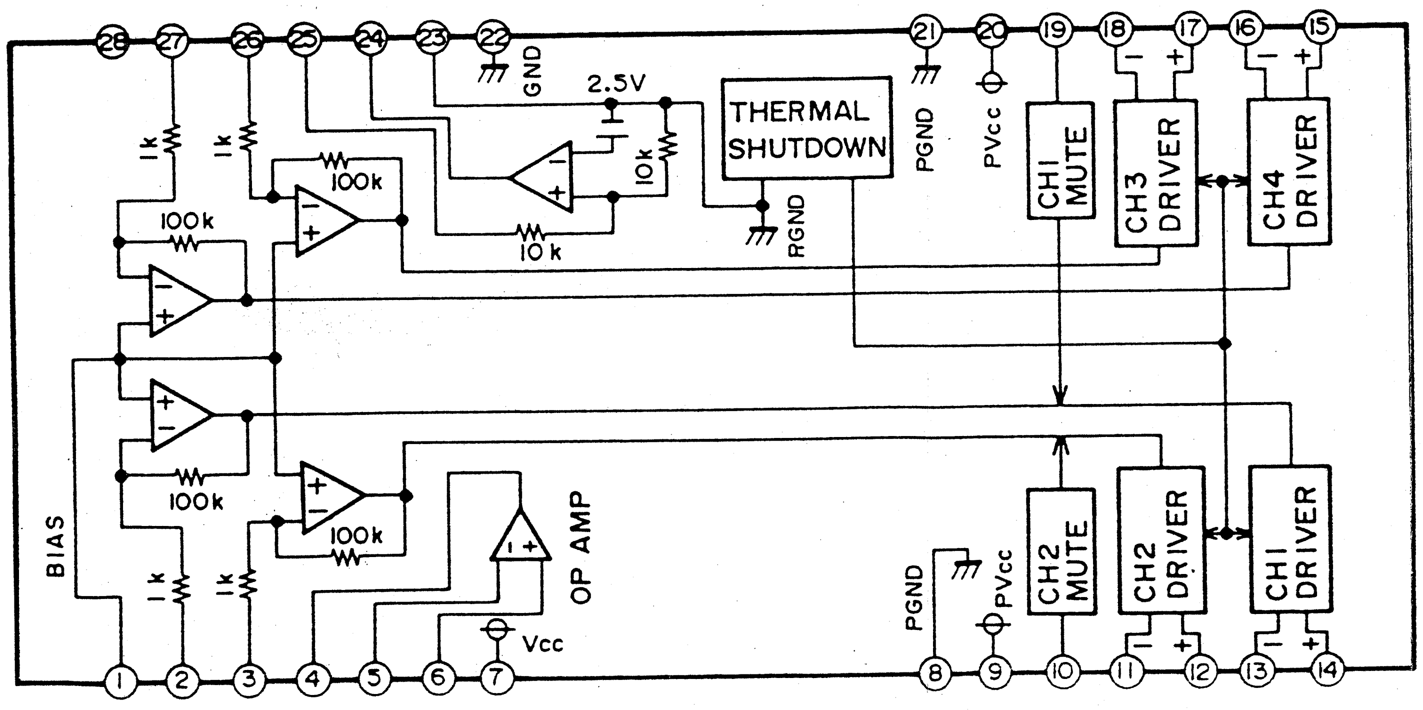
IC650 - LA9240MS


Vcc1
LDS
LDD
BHI
PHI
LF2
VR
REF I
Vcc2
NC
DRF
CE
DAT
CL
CLK
DEF
APC
RF DET
REF
FIN2
FIN1
E
F
I/V
VCA
BAL
VCA
U-COM INTER FACE
NC
NC
NC
DGND
SLI
SLC
SLC
RFS-
RF AMP
RFSM
TB
TE-
TE
TE
TESI
SCH
TH
TA
TD-
TD
JP
TO
FD
T.SERVO & T.LOGIC
F.SERVO & F.LOGIC
SPINDLE SERVO
SLED SERVO
CV+
CV-
SLOF
HFL
TES
TOFF
TGL
JP+
FD-
FA
FA-
FE
FE-
AGND
SP
SPI
SPG
SP-
SPD
SLEQ
SLD
SL-
SL+
JP-

IC651 - BA6999FP


GND
2.5V
THERMAL SHUTDOWN
PGND
PVcc
CH1 MUTE
CH3 DRIVER
CH4 DRIVER
10k
1k
1k
100k
100k
10 k
RGND
BIAS
100k
100k
1k
1k
OP AMP
Vcc
PGND
PVcc
CH2 MUTE
CH2 DRIVER
CH1 DRIVER
1
2
3
4
5
6
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28

IC801 - LC66566B

PIN NO	PORT NAME
1	D7
2	D6
3	D5
4	D4
5	D3
6	D2
7	D1
8	D0
9	CLAMP
10	UP
11	LOW
12	MAG.SW
13	$\overline{DS}$
14	A/$\overline{D}$
15	R/$\overline{W}$
16	N.C
17	N.C
18	N.C
19	N.C
20	N.C
21	$\overline{INT}$
22	TEST
23	VSS
24	OSC1
25	OSC2
26	$\overline{RESET}$
27	BATT
28	N.C
29	N.C
30	POWER
31	N.C
32	ELV-
33	ELV+
34	FEM-
35	FEM+
36	LOAD+
37	LOAD-
38	N.C
39	N.C
40	VR0
41	VR1
42	TH1
43	TH2
44	ACC
45	D.ON
46	EJECT
47	DRF
48	N.C
49	DISC.C
50	6/10CD
51	MUTE
52	DSRST
53	LOADO
54	INSIDE
55	N.C
56	VDD
57	SQOUT
58	COIN
59	CQCK
60	WRQ
61	N.C
62	RWC
63	N.C
64	STBY

16

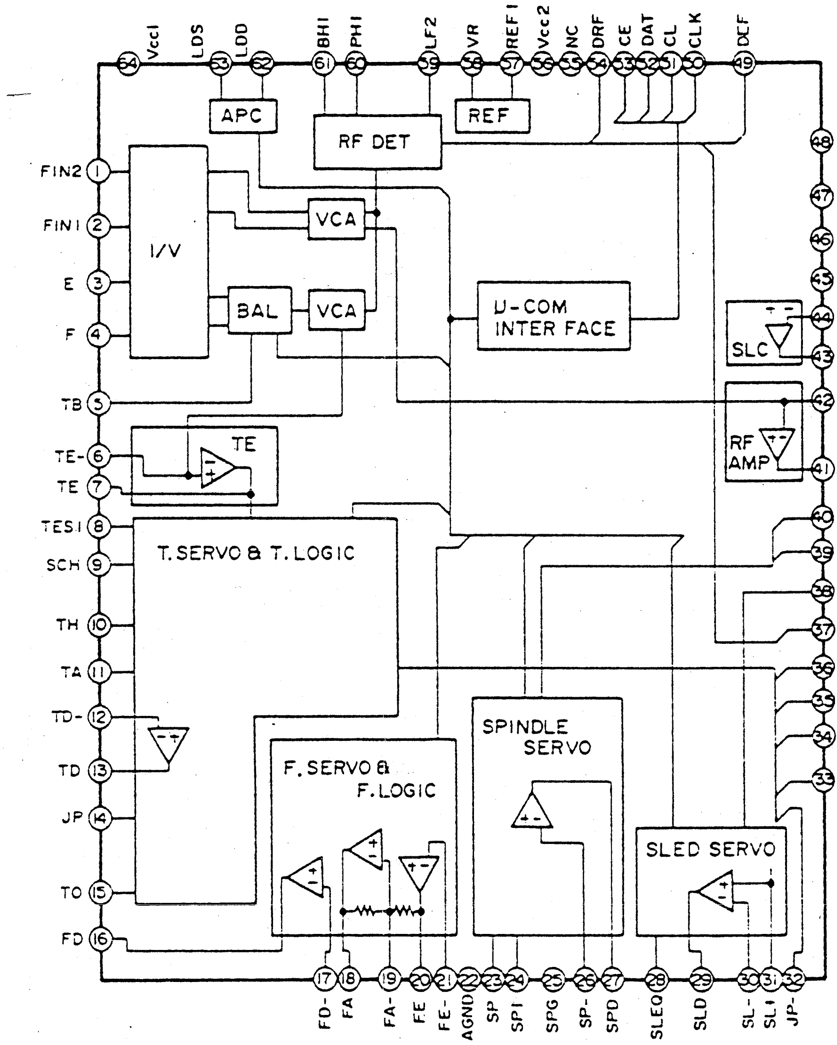
by subtrac-

ıove mirror.

)SP.

IC CIRCUIT DESCRIPTION

IC650 - LA9240MS


Vccl
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LDD
BHI
PHI
LF2
VR
REF I
Vcc2
NC
DRF
CE
DAT
CL
CLK
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RF DET
REF
I/V
VCA
BAL
VCA
U-COM
INTER FACE
SLC
RF
AMP
TE
T. SERVO & T. LOGIC
F. SERVO & F. LOGIC
SPINDLE
SERVO
SLED SERVO
FIN2 ①
FIN1 ②
E ③
F ④
TB ⑤
TE- ⑥
TE ⑦
TES1 ⑧
SCH ⑨
TH ⑩
TA ⑪
TD- ⑫
TD ⑬
JP ⑭
TO ⑮
FD ⑯
FD- ⑰
FA ⑱
FA- ⑲
FE ⑳
FE- ㉑
AGND ㉒
SP ㉓
SPI ㉔
SPG ㉕
SP- ㉖
SPD ㉗
SLEQ ㉘
SLD ㉙
SL- ㉚
SL+ ㉛
JP- ㉜
㉝ JP+
㉞ TGL
㉟ TOFF
㊱ TES
㊲ HFL
㊳ SLOF
㊴ CV-
㊵ CV+
㊶ RFSM
㊷ RFS-
㊸ SLC
㊹ SLI
㊺ DGND
㊻ NC
㊼ NC
㊽ NC
㊾
(50)
(51)
(52)
(53)
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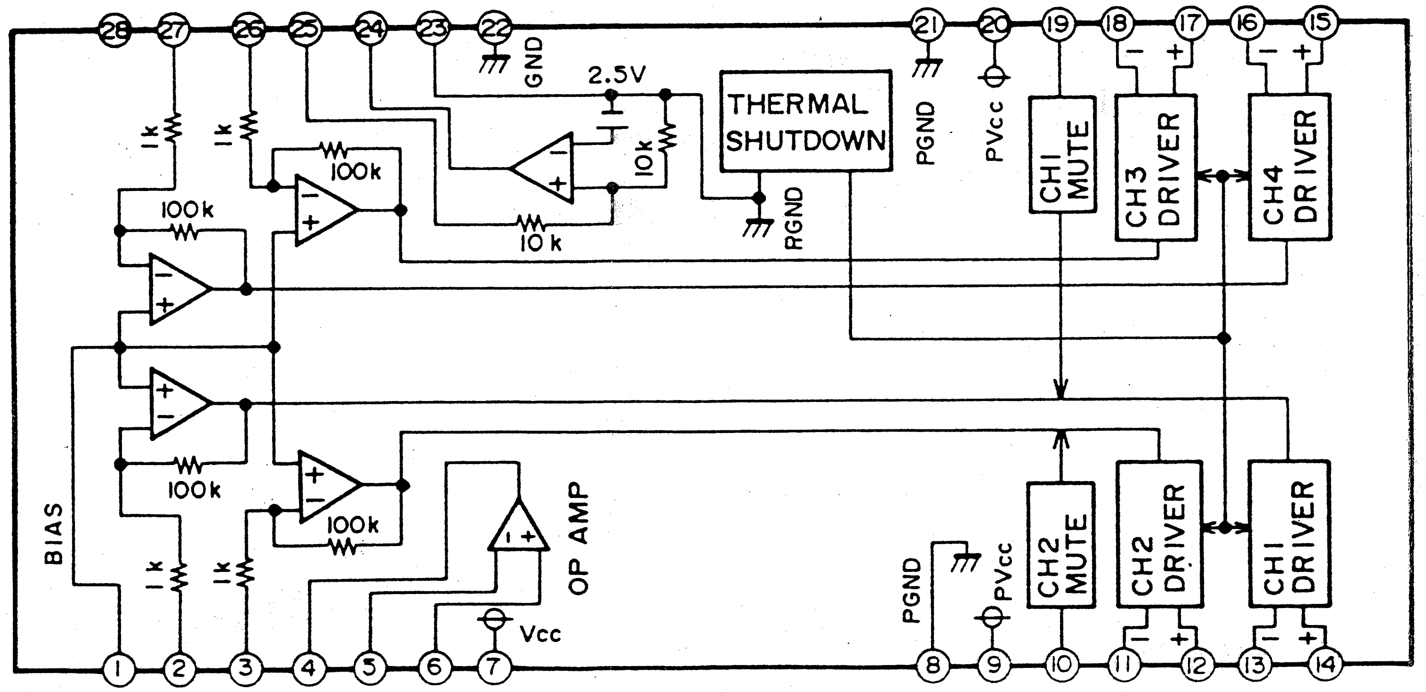
IC651 - BA6999FP


GND
2.5V
THERMAL
SHUTDOWN
RGND
PGND
PVcc
CH1
MUTE
CH3
DRIVER
CH4
DRIVER
1k
1k
100k
100k
10k
10k
100k
100k
1k
1k
BIAS
OP AMP
Vcc
PGND
PVcc
CH2
MUTE
CH2
DRIVER
CH1
DRIVER
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪
⑫
⑬
⑭
⑮
⑯
⑰
⑱
⑲
⑳
㉑
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㉖
㉗
㉘

IC CIRCUIT BLOCK DIAGRAM

IC801 - LC66566B

PIN NO	PORT NAME	I/O	DESCRIPTION
1	D7	I/O	8bit bi-directional address or data bus D2B
2	D6	I/O	8bit bi-directional address or data bus D2B
3	D5	I/O	8bit bi-directional address or data bus D2B
4	D4	I/O	8bit bi-directional address or data bus D2B
5	D3	I/O	8bit bi-directional address or data bus D2B
6	D2	I/O	8bit bi-directional address or data bus D2B
7	D1	I/O	8bit bi-directional address or data bus D2B
8	D0	I/O	8bit bi-directional address or data bus D2B
9	CLAMP	I	Disc clamp finish SW input
10	UP	I	Elevator upper limit SW input
11	LOW	I	Elevator lower limit SW input
12	MAG.SW	I	Magazine detection SW input
13	$\overline{\text{DS}}$	O	Data strobe to access data bus D2B
14	A/$\overline{\text{D}}$	O	Selects address or data on D0~D7 D2B
15	R/$\overline{\text{W}}$	O	Read/Write selector D2B
16	N.C	O	No connection
17	N.C	O	No connection
18	N.C	O	No connection
19	N.C	O	No connection
20	N.C	O	No connection
21	$\overline{\text{INT}}$	I	Interrupt input D2B
22	TEST	I	Connection to ground
23	VSS	—	Ground
24	OSC1	I	Ceramic oscillator connection terminal for system clock
25	OSC2	O	Ceramic oscillator connection terminal for system clock
26	$\overline{\text{RESET}}$	I	Reset signal input terminal
27	BATT	I	Battery LOW detection input terminal
28	N.C	O	No connection
29	N.C	O	No connection
30	POWER	O	Main power supply ON/OFF output terminal
31	N.C	O	No connection
32	ELV-	O	Elevator moving-down output signal
33	ELV+	O	Elevator moving-up output signal
34	FEM-	O	Pickup moving-inside ouput signal
35	FEM+	O	Pickup moving-outside output signal
36	LOAD+	O	Output to move a tray in the direction out of magazine with loading motor
37	LOAD-	O	Output to move a tray in the direction back to magazine with loading motor
38	N.C	O	No connection
39	N.C	O	No connection
40	VR0	I	Reference voltage for TH1
41	VR1	I	Reference voltage for TH2
42	TH1	I	Temperature sensor ON input signal
43	TH2	I	Temperature sensor OFF input signal
44	ACC	I	ACC ON/OFF detection input
45	D.ON	I	Disc detection Photo transistor input terminal
46	EJECT	I	Magazine eject key input terminal
47	DRF	I	Focus OK signal input terminal
48	N.C	O	No connection
49	DISC.C	I	Elevator position detection pulse input
50	6/10CD	I	Initial setting input terminal for 6discs or 10discs changer switching
51	MUTE	O	Mute output terminal
52	DSRST	O	Reset signal for DSP(LC78620E) output terminal
53	LOADO	I	Magazine tray detection SW input
54	INSIDE	I	Inner circle limit detection SW input
55	N.C	O	No connection
56	VDD	—	Power supply terminal(+5V)
57	SQOUT	I	Interface with DSP(LC78620E)
58	COIN	O	Interface with DSP(LC78620E)
59	CQCK	O	Interface with DSP(LC78620E)
60	WRQ	I	Interface with DSP(LC78620E)
61	N.C	O	No connection
62	RWC	O	Interface with DSP(LC78620E)
63	N.C	O	No connection
64	STBY	I	Stand by position cancellation input terminal

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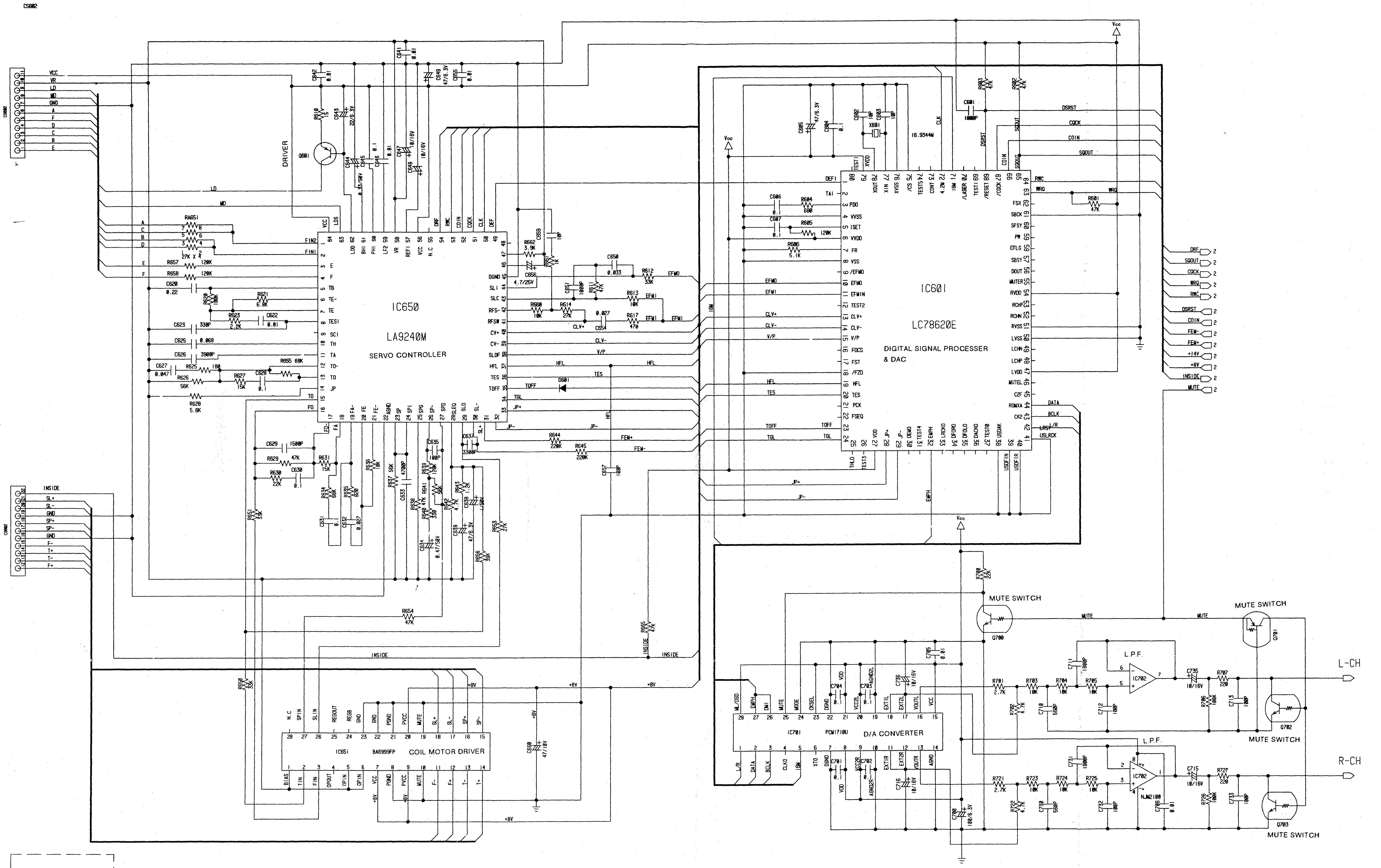
CIRCUIT DIAGRAM 1/3

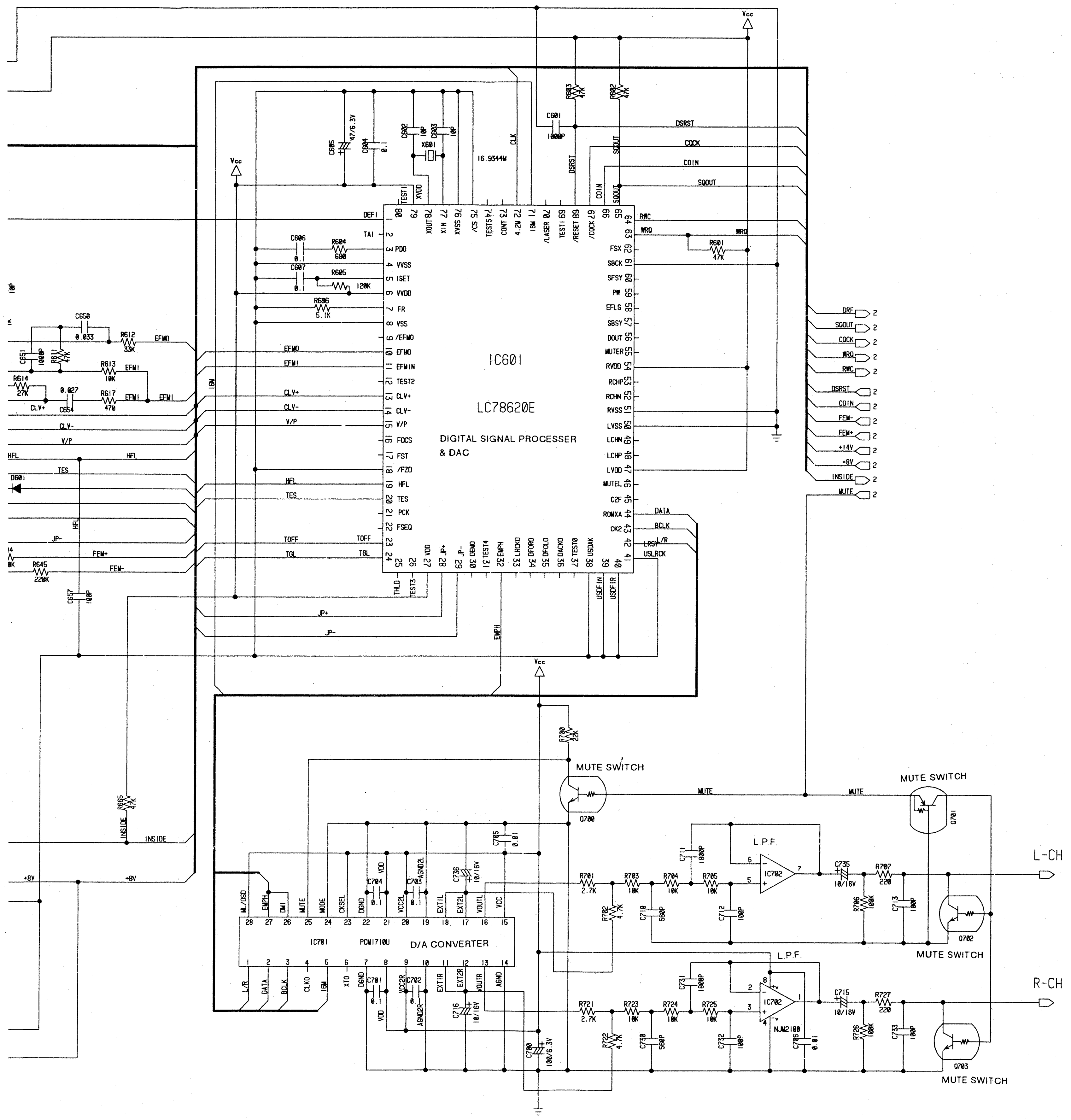

CS602
VCC
VR
LD
MD
GND
A
F
D
C
B
E
DRIVER
Q601
IC650
LA9240M
SERVO CONTROLLER
IC601
LC78620E
DIGITAL SIGNAL PROCESSER
& DAC
X601
16.9344M
Vcc
DRF
SQOUT
COCK
WRQ
RWC
DSRST
COIN
FEM-
FEM+
+14V
+8V
INSIDE
MUTE
INSIDE
SL+
SL-
GND
SP+
SP-
F-
T+
T-
F+
D601
IC651
BA6999FP
COIL MOTOR DRIVER
IC701
PCM1710U
D/A CONVERTER
MUTE SWITCH
Q700
Q701
Q702
Q703
L.P.F.
IC702
NJM2100
L-CH
R-CH
+8V

Q601	:	2SA1338
Q700,Q702,Q703	:	2SC3859
Q701	:	2SA1341
D601	:	DS8010

VOLTAGE

(Note: all v

IC601 -	**L**
1:	0
2:	N.
3:	3.
4:	0
5:	1.
6:	5.
7:	1.
8:	0
9:	N
10:	5.
11:	2.
12:	N
13:	5.
14:	0
15:	0
16:	N
17:	N
18-20:	0
21:	N
22:	N
23:	0
24:	5
25:	N
26:	N
27:	5
28:	0
29:	0
30-37:	N
38-41:	0
42-46:	N
47:	5
48:	5
49:	5
50:	0
51:	0
52:	5
53:	5
54:	5
55-60:	N
61:	0
62:	N
63-65:	5
66:	5
67:	5
68:	5
69-71:	N
72:	5
73:	N
74:	N
75:	0
76:	0
77:	4
78:	5
79:	5
80:	I


IC601
LC78620E
DIGITAL SIGNAL PROCESSER & DAC
X601
16.9344M
Vcc
IC701
PCM1710U
D/A CONVERTER
IC702
NJM2100
L.P.F.
L.P.F.
MUTE SWITCH
MUTE SWITCH
MUTE SWITCH
MUTE SWITCH
Q700
Q701
Q702
Q703
L-CH
R-CH
MUTE
INSIDE
+8V

VOLTAGE MEASUREMENT TABLES

(Note: all voltages given in these tables are average DC values, unless otherwise noted)

IC601 - LC78620E

1:	0V
2:	N.C.
3:	3.0V
4:	0V
5:	1.8V
6:	5.0V
7:	1.5V
8:	0V
9:	N.C.
10:	5.0V PULSE
11:	2.5V
12:	N.C.
13:	5.0V PULSE
14:	0V
15:	0V
16:	N.C.
17:	N.C.
18-20:	0V
21:	N.C.
22:	N.C.
23:	0V
24:	5.0V
25:	N.C.
26:	N.C.
27:	5.0V
28:	0V
29:	0V
30-37:	N.C.
38-41:	0V
42-46:	N.C.
47:	5.0V
48:	5.0V PULSE
49:	5.0V PULSE
50:	0V
51:	0V
52:	5.0V PULSE
53:	5.0V PULSE
54:	5.0V
55-60:	N.C.
61:	0V
62:	N.C.
63-65:	5.0V PULSE
66:	5.0V
67:	5.0V CLOCK
68:	5.0V
69-71:	N.C.
72:	5.0V CLOCK
73:	N.C.
74:	N.C.
75:	0V
76:	0V
77:	4.2V
78:	5.0V CLOCK
79:	5.0V
80:	N.C.

IC650 - LA9240MS

1-21:	2.5V
22:	0V
23-31:	2.5V
32:	0V
33:	0V
34:	5.0V
35:	0V
36:	5.0V PULSE
37-39:	0V
40:	5.0V PULSE
41:	3.0V PULSE
42-44:	2.5V
45:	0V
46-48:	N.C.
49:	0V
50:	5.0V CLOCK
51:	5.0V CLOCK
52:	5.0V
53:	0V
54:	5.0V
55:	N.C.
56:	5.0V
57-60:	2.5V
61:	2.0V
62:	3.8V
63:	0.2V
64:	5.0V

IC651 - BA6999FP

1-3:	2.5V
4:	N.C.
5:	2.5V
6:	2.5V
7:	8.0V
8:	0V
9:	8.0V
10:	0V
11:	0.5V
12-14:	0V
15:	2.0V PULSE
16-19:	0V
20:	8.0V
21-23:	0V
24:	N.C.
25:	N.C.
26:	2.5V
27:	2.5V
28:	N.C.

IC701 - PCM1710U

1-6:	5.0V CLOCK
7:	0V
8:	5.0V
9:	5.0V
10:	0V
11-13:	2.5V
14:	0V
15:	5.0V
16:	2.5V
17:	2.5V
18:	0V
19:	0V
20:	5.0V
21:	5.0V
22:	0V
23:	5.0V
24:	0V
25:	5.0V
26:	0V
27:	0V
28:	5.0V

IC702 - NJM2100M

1-3:	2.5V
4:	0V
5-7:	2.5V
8:	5.0V

Q601 - 2SA1338-6

B:	3.5V
C:	2.0V
E:	4.0V

Q700 - DTC114TK

B:	0V
C:	5.0V
E:	0V

Q701 - UN2113

B:	0V
C:	0V
E:	0V

Q702 - DTC114TK

B:	0V
C:	0V
E:	0V

Q703 - DTC114TK

B:	0V
C:	0V
E:	0V

OLTAGE MEASUREMENT TABLES

Note: all voltages given in these tables are *__average__* *__DC__* *__values__*, *unless otherwise noted)*

C501 - MC147805AUT

:	0.5V
:	12.0V
:	5.5V

C551 - L78M05T

:	8.0V
:	0V
:	5.0V

C801 - LC66566B

:	5.0V
:	5.0V
:	0V
:	5.0V
-9:	0V
0:	5.0V
1:	5.0V
2:	0V
3:	5.0V
4:	0V
5:	5.0V
6-20:	0V
1:	5.0V
2:	0V
3:	0V
4:	5.0V CLOCK
5:	5.0V CLOCK
6-30:	5.0V
1-39:	0V
0:	1.8V
1:	2.0V
2:	4.0V
3:	4.0V
4:	5.0V
5:	0V
6:	0V
7:	5.0V
8:	5.0V
9-51:	0V
2-55:	5.0V
6:	5.0V
7:	5.0V PULSE
8:	5.0V
9:	5.0V CLOCK
0:	5.0V PULSE
1-63:	0V
4:	5.0V

C802 - S-8054HN

:	5.0V
:	8.0V
:	0V

IC803 - PST9138N

1:	N.C.
2:	0V
3:	0V
4:	5.0V
5:	5.0V

IC804 - TC7SU04F

1:	0V
2:	4.5V
3:	0V
4:	0V
5:	5.0V

IC805 - TC7SU04F

1-3:	0V
4:	5.0V
5:	5.0V

IC806 - TC4S71F

1:	5.0V
2:	5.0V
3:	0V
4:	5.0V
5:	5.0V

IC850 - LB1644

1:	12.0V
2-8:	0V
9:	12.0V
10-16:	0V

IC851 - MSM6307GS

1-3:	5.0V PULSE
4:	0V
5:	5.0V PULSE
6:	5.0V PULSE
7:	0V
8:	5.0V PULSE
9:	5.0V PULSE
10-16:	0V
17:	5.0V
18:	0V
19;	2.5V
20:	2.5V
21:	5.0V
22:	5.0V PULSE
23:	5.0V
24:	5.0V CLOCK
25:	5.0V CLOCK
26:	5.0V
27:	5.0V PULSE
28:	0V
29-32:	5.0V PULSE

Q510 - 2SC2812

B:	5.5V
C:	12.0V
E:	5.0V

Q550 - 2SD2199S

B:	8.6V
C:	12.0V
E:	8.0V

Q803 - DTC124XK

B:	4.0V
C:	0V
E:	0V

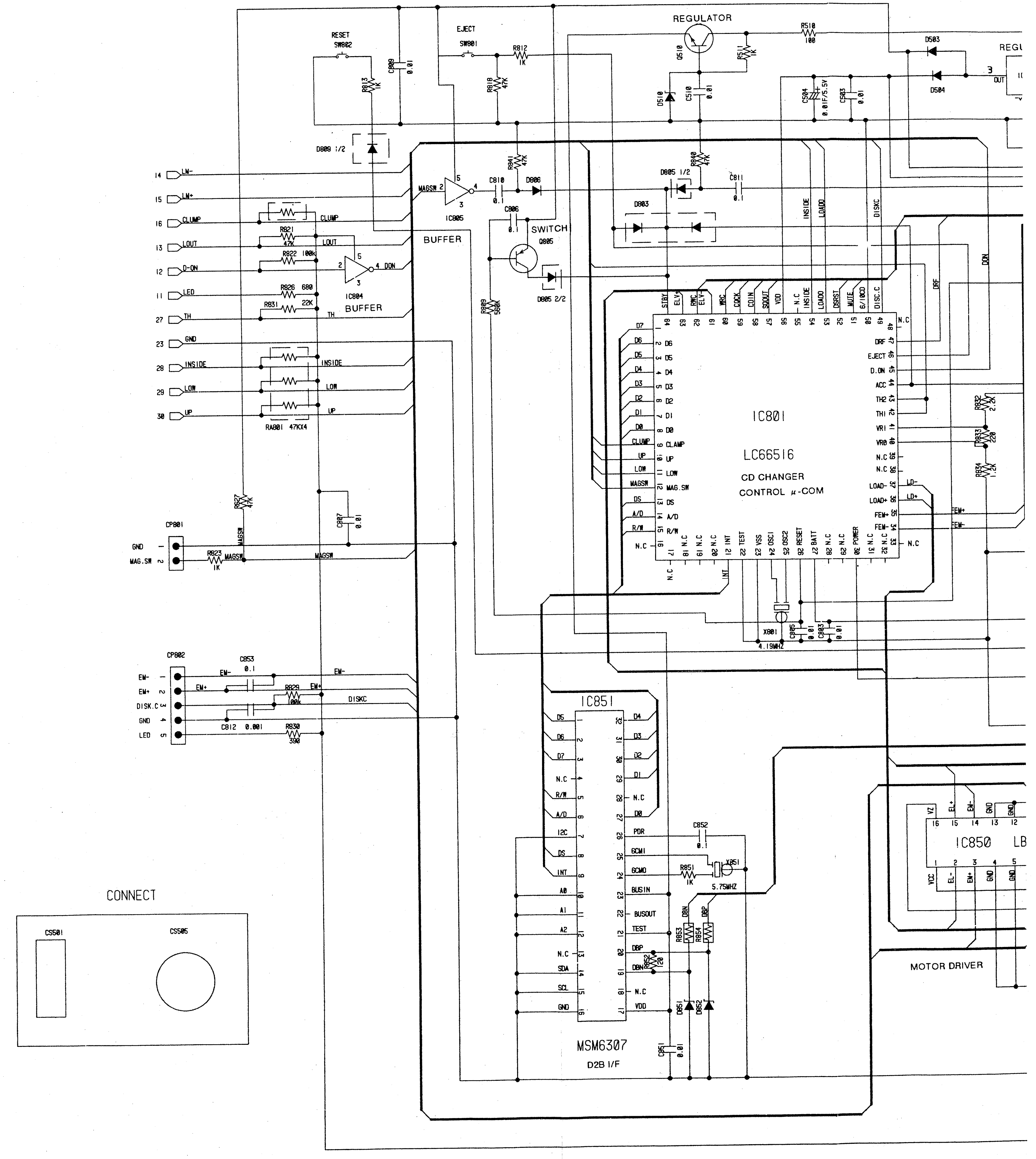
Q804 - 2SB1202

B:	11.0V
C:	12.0V
E:	12.0V

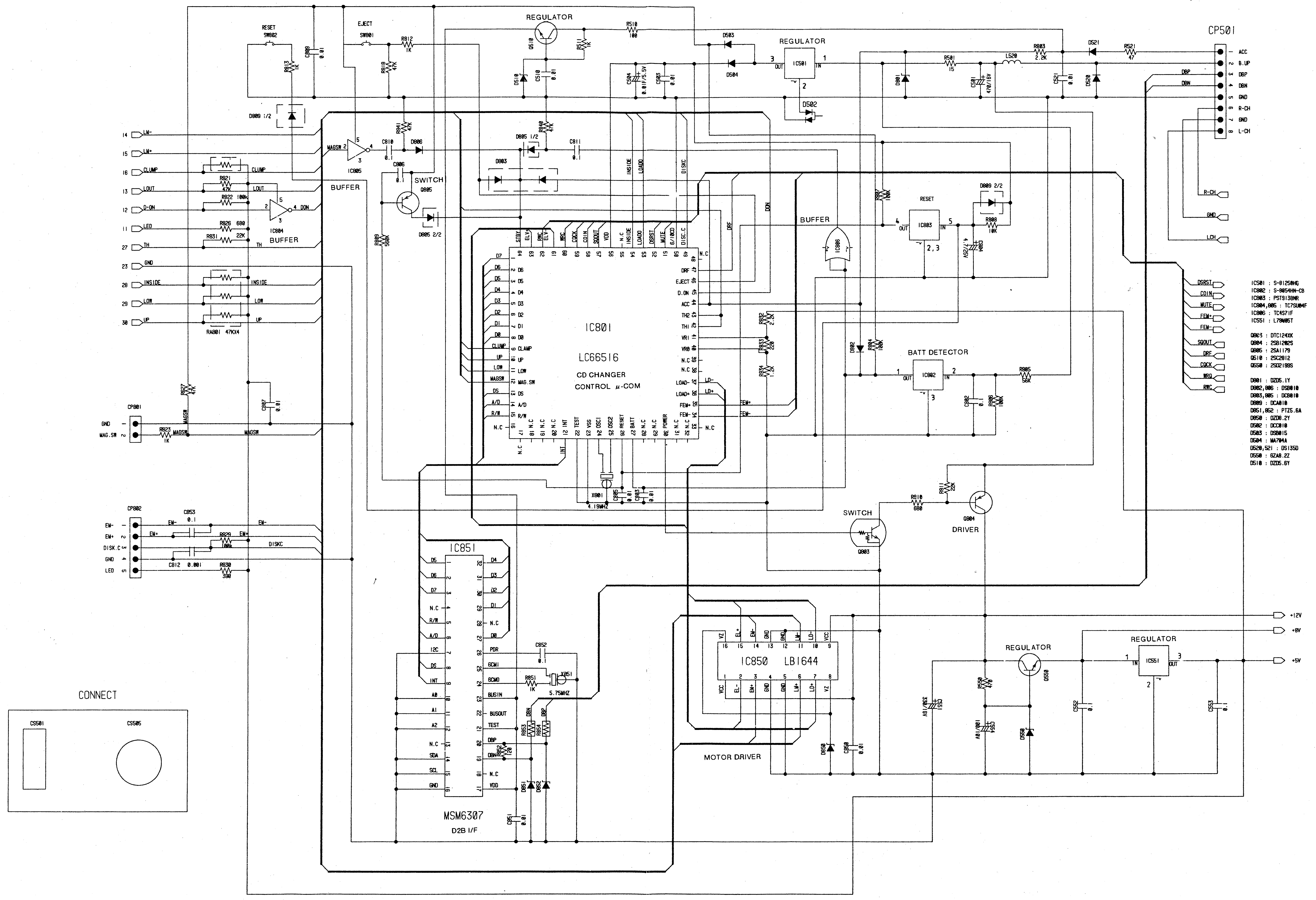
Q805 - 2SA1179

B:	5.0V
C:	0V
E:	5.0V

CIRCUIT DIAGRAM 2/3


RESET
SW802
EJECT
SW801
REGULATOR
Q510
R510 100
D503
D504
REGU
BUFFER
IC805
IC804
BUFFER
SWITCH
Q805
D805 2/2
D809 1/2
D805 1/2
D803
RA801 47KX4
MAGSW
CP801
GND
MAG.SW
CP802
EM-
EM+
DISK.C
GND
LED
DISKC
IC801
LC66516
CD CHANGER
CONTROL μ-COM
X801
4.19MHZ
IC851
MSM6307
D2B I/F
X851
5.75MHZ
IC850
LB
MOTOR DRIVER
CONNECT
CS501
CS505

CIRCUIT DIAGRAM 2/3


REGULATOR
RESET SW802
EJECT SW801
REGULATOR IC501
CP501
ACC
B.UP
DBP
DBN
GND
R-CH
GND
L-CH
BUFFER
SWITCH Q805
IC805
IC804
BUFFER
RESET IC803
BUFFER IC806
BATT DETECTOR IC802
IC801
LC66516
CD CHANGER
CONTROL μ-COM
CP801
GND
MAG.SW
CP802
EM-
EM+
DISK.C
GND
LED
IC851
MSM6307
D2B I/F
SWITCH Q803
Q804 DRIVER
IC850 LB1644
MOTOR DRIVER
REGULATOR Q550
REGULATOR IC551
+12V
+8V
+5V
CONNECT
CS501
CS505
IC501 : S-81250HG
IC802 : S-8054HN-CB
IC803 : PST9138NR
IC804,805 : TC7SU04F
IC806 : TC4S71F
IC551 : L78M05T
Q803 : DTC124XK
Q804 : 2SB1202S
Q805 : 2SA1179
Q510 : 2SC2812
Q550 : 2SD2199S
D801 : DZD5.1Y
D802,806 : DSB010
D803,805 : DCB010
D809 : DCA010
D851,852 : PTZ5.6A
D850 : DZD8.2Y
D502 : DCC010
D503 : DSB015
D504 : MA704A
D520,521 : DS135D
D550 : 6ZA8.2Z
D510 : DZD5.6Y

PCS 82 458

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